## ATTACHMENT 1 BORING LOGS AND WELL CONSTRUCTION LOGS

		!				ROCK	BO	REH	OLE	LOG	V	/ELL	GMW	<b>-</b> 1			
							E		AND LOC Canyon, r	ATION near Paia,	Californ	iia	BORING GA	NO. /W-1	i i		
							DRILLI	NG ME	THOD: A	ir Rotary/	Mud Rot	ory	SHEET				
							HOLE	DIAME		inch (0 to					)F 3		
			ee F or Lo					····		nch (48 to i-inch (54			DRIL START				
		,	J	, ,	,,,,,,		WATED	LEVEL	21.25	22.48	+ (0 90.	J reet)	TIME	<del></del>	INISH TIME		
							TI		27.20					_			
							DA		8-13-90	9-5-90			DATE	1	DATE	Inc.	
MUTAC	: M.S.	.L.			ELE	EVATION: 331.36	CASING	DEPTH	48.0				8-7-90	8-	10-90	ing,	S
DRILLIN	1G: M	opile	8-6	CXI	₹ot	ory w/Christensen	Coring	SURF	ACE CON	DITIONS:	Soil &	Boulders	3			Orilling,	ton,
ANGLE	: Vert	ical						Note:	Reference	measure	ment po	oints for	lithology	from		14—F	Fullerton,
SAMPL	Е НА	мме	R TO	RQI	JĒ:	Not Applicable			ground si	urface; wo	iter leve	ls from	top of ca	sing	in feet.	1	
Li li			COR											PIT	3 p-	CONTRACTOR	
DEPTH IN FEET	CRY		SCER	<b>&gt;</b>		S	OIL DES		N		30 L		RVED CK	QNA	CASING TYPE BLOWS/FOOT ON CASING	SAC.	
HL	PERCENT RECOVERY	ž	2 × × × ×	RFCOVERY	ROD	I	ROCK LI	R THOLOG	Υ		SYMBOL	STRUCT	URE(S)	SAMPLER AND	ASING LOWS,	Z Z	
Dia .	u.	2 2	PIECES LARGER THAN 2X CORED DIAMETER	RFC	_									SAM	3 8	8	
		<u></u>												1	<del></del>	NG NG	Ì
	Å		A	1	Å	ALLUVIUM (	Qal <sub>3</sub> )				* * * * * *		Å			DRILLING	
					:	Contains sand,	silt, gr	avel, or	nd boulder	moterial.	* * *					ă	
					١.						× × ×				-		
					1						× × ×					1	
- 5					İ		<del></del>			-	× × ×				-		
					i	COLLUVIUM (	Qc)				000						
						Crystalline boul matrix, light be horneblende.	iders in rown (5	silty fil yr 5/6)	ne to med , quartziti	dium sonc c with	0000					1	
							م بم	and the	cand co	ma waad							ACW
- 10					1	Increasing med fragments.	num to	coorse	sana, so	me wood	0000			tion	Summary		ВУ
	a)	(a)	9	e	3						0000			Circula	1 1'	Amr	KED
	Applicable	Applicable	Applicable	Applicable	Applicable						- b.50]	Not Ap	plicable	Mud (	Constuction	Amr M.	
· 15	Not Ap	Not Ap	Not Ap	Not Ap	Not Ap	Rig chatter at	155 1	o 165	feet		0.000	,		From		Amr	
	N	Z	N	Z	Z	My chatter at	10.0,	.0.0.0	.001.		(0)			Cuttings F	to Well		12-90
•	L. Washington										00000			- Cutt	Refer 1	- - - -	10-1
- 20						Becomes medi					000					<u>}</u>	DATE
						with wood frag (10yr 5/4).	gments.	modera	te yellow	brown	000					OGGED BY	3
											500	1			-	1 -	1
- 25						Some drilling	fluid los	s at 24	4.0 feet.		0000					1	
						Increasing san	d and o vn, (5yr	grovel c 3/4).	content		50.0	1					
-	1	1	1	1							000	1	Ţ	<u> </u>	111	1	

C					- 3 -	ROCK BOREHOLE LOG		BORING GM	NO. IW1	
						SITE NAME AND LOCATION Gregory Canyon, near Pala,	Californ	SHEET	2 of 3	
DEPTH IN FEET 4	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 20		RQD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVED ROCK STRUCTURE(S)	SAMPLER AND BIT CASING TYPE BLOWS/FOOT ON CASING	And a series of a physical series of the ser
0						Crystalline occuders in Silty Sand matrix light brown (5yr 5/6), slighty maist, fine to medium Sand, quartzitic with harnblende.	00000000	Not Applicable	Cuttings	H-F Dritting, Inc.
5		1	0	100	0	BONSALL TONALITE (Kb), weathered  Wet, moderate yellow brown, (5yr 4/4) to dark yellow brown (10yr 4/2) w/gravel fragments; Contains nornblende, plagioclose, piotite;				DRILLING CONTRACTOR
_		2	0	0	0					DRILLING C
0		3	0	20	0	Becomes grayish black (2n2), friable "salt— and—pepper" texture; medium to coarse grained at 40 feet.			Coring	
5			-	-		Depth of hole miscalculated at 45 feet, actual depth 48 feet.			Christensen Wire Line C rr To Well Construction Not, Applicable	
)		4	2	100	50	Highly fractured.		N5W;40°E fracture	Christ	Amr M. Amr
5		5	8	100	90	LEUCOGRANODIORITE (Klm)  Wet, moderate yellow brown (5yr 4/4),porphyritic texture, highly fractured; medium—grained dike Highly weathered.		N5W;60E,1/10" opeture infilled		GED BY
)		6	5	100	50	Quartz & Calcite infilling, at 65 feet.		w/calcite  N50W;65W  Iron—stained fracture  N80E;60'N fracture N5W;82'E		
5					-	Weathered porphyritic dike; with 1.0' chalk-like zone, pinkish gray (5yr 8/1) at 66 feet.		fracture N5W;85'W fracture		<u> </u>

C		,				ROCK BOREHOLE LOG			BORING GI	NO. √W−1		
						SITE NAME AND LOCATION Gregory Canyon, near Pala,	Califor	nia	SHEET	3 o	 F 3	;
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE. PIECES LARGER OF THAN 2X CORED OF DIAMETER 20		RQD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSE RO STRUCT	CK	SAMPLER AND BIT	CASING TYPE	
		7	6	000	70	Becomes moderately fracturea.						
70 		8	5	100	80	BONSALL TONALITE (Kb), weathered  Wet, medium dark gray (3n3), highly fractured, contains hornblende, quartz, biotite; some ironstaining along fractures; 1/8" quartz & Hornblende crystals.		N6W;42°E fracture	Ξ	Coring	Summary	
75		9	3	100	65	Becomes moderately fractured at 76 feet.				Christensen Wire Line C	Well Construction	Not Applicable —
3 <b>.</b>		10	3	100	50	Frocture containing quartz and calcite infilling. Friable, gravel & sandy clay material zone at 80 feet.  LEUCORANODIORITE (KIm)		N5W;60°l fracture	Ξ	Christe	Refer To M	
85		1 1	2	100	20.	Wet, very light groy (8n8), gneissic texture Moderotely fractured, groy with crystals of quartz, plagioclase and some biotite.		NSW;78*I fracture N80W;72 fracture				
90						BONSALL TONALITE (Kb), unweathered Wet, medium dark gray (3n3)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	N80W;80 fracture	) E	Y	V	Y
95						Bottom of hole at 90.5 feet.					And the second s	
100			, transmission ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (									

Fullerton, Ca.

DRILLING CONTRACTOR HAF Drilling, Inc.

ACW Amr M. Amr

DATE 10-12-90 CHECKED BY LOGGED BY

Amr

Ξ Amr NSPECTOR:

Pala, California 012004

C		/				ROCK	BOI	REHO	LE	LOG	W	'ELL	GMW	-2	<b>&gt;</b>	
							1	NAME A regory C		ATION near Pala,	Californ	iio	BORING GM	NO. W-2		
							DRILL	NG MET	HOD: M	ud Rotary	& Air I	Rotary	SHEET			
			_				HOLE	DIAMET		-inch (0-					OF 4	_
			See P or La				<u></u>			.25-inch   -inch (10			DRIL			<del>,  </del>
		,	ψ. <u>.</u>		11011		WATER	LEVEL	19.50	17.04	3-106	reet)	START		INISH TIME	
							TI		19.50	17.04		1		_		
							DA		3-17-90	9-5-90		<del>                                     </del>	DATE	+-	DATE	<u> </u>
DATUM	(⊢M.S	.L.			51	EVATION: 324.64	CASING		50.0				8-13-90			10 5
			8-6	CXI		ary w/Christensen	.,	·	CE CON	DITIONS:	Soil &	Surface	4	<u> </u>		
ANGLE	: Verl	ical			•			Note:					nology from	arour		L <sub>+</sub>
SAMPL	Ė HA	ММЕ	R TO	RO	UE:	Not Applicable		itore.		Water levels				groui	iu	
·			COR					<u> </u>	30,1000,	154(6) 164676	1	p 01 000	9	<b>I</b>		
DCPTH IN FEET	₹ =	<del>                                     </del>					SOU DES	CRIPTION	i				RVED	118 G1	¥ 10	ON CASING
Z T	PERCENT RECOVERY	RUN NO.	O. OF CORE- ECES LARGER AN 2X CORED DIAMETER	VERY	ç		0	R			SYMBOL		CK TURE(S)	SAMPLER AND	CASING TYPE BLOWS/FOOT	CASI
DEPT	<u>8</u> <u>5</u>	2	NO. OF PIECES I THAN 2X DIAME	RECOVERY	RDD		ROCK LI	THOLOGY			,		( - )	MPLE	CASI	8 0
			2 # £			<u> </u>								Ŋ		
			1	1	1	ALLUVIUM (C	) (al <sub>2</sub> )							i	T i	귀 홀
	4	<b> </b>	A	<b>A</b>	å	ALLOYIUM (	20127						<b>A</b>	•	♣   .	DRII ING
					'	Silty sand & si	it, dark	yellow o	rown (10	Oyr 5/4).						
							·	,	`	, , ,						-
																17
5						-										
;																
10						More fine to co	oorse sa	ind, mod	erote ve	llow					5	
10						brown (10yr 5/	(4) cont	ains qua	rtz, hórr	iblende,	1			tion	nmar)	
						plagioclase, ot	io leet.							Circula	Sur	-  ,
	De	Die	ole.	ble	pie .						1				0.0	
	lica	Applicable	lico	lica	Applicable									pn	tuct	<u> </u>
	Applicable	Арр	Not Applicable	Applicable	App			_				Not Ap	oplicable	From Mud	Refer to Well Constuction	Not Applicable
15	Not	Not	lot	Not	TON NO	Medium to coa coarse sana si							-	Į.		To April
					4		. ,				1.				ι ≪	1
														Cuttings	2	
														3	fer	
															8	-  ,
20						Fine to medium	sond	ot 20 fe	et, light	brown						
					1	(5yr 5/6), ;ess	nornble	enae grai	ins.							
						Rig chatter at	22 feet									1 2
25																
<b>ل</b> کے																
													1			1
		1											1		1	<b>V</b> _

Fullerton, Co.

CHECKED BY

DATE 10-12-90

Y						ROCK BOREHOLE LOG		ВО	RING NO.	
						SITE NAME AND LOCATION Gregory Canyon, near Pala,	Califor		EET 2 OF	4
DEPTH IN FEET	PERCENT RECOVERT	RUN NO.	NO. OF CORC- PIECES LARGER O THAN 2X CORED O DIAMFTER 20		ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVEI ROCK STRUCTURE	Ŀ	CASING TYPE BLOWS/FOOT ON CASING
30	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable				Cuttings	
35		<b>Y</b>	C	50	0	Clayey sand with grover sized fragments of quartz slightly micoceous, light brown (5yr 5/6).  Clay at 37 feet, moderate brown (5yr 4/4).				
40		2	0	50	0	Clayey sand with fine to coarse quartzitic gravels.				Summory
<b>4</b> 5		3	0	20	0	BONSALL TONALITE (Kb) weathered  Moist medium gray (5n5), fine to coarse gravel— sized fragments up to 2" in diameter, highly fractured. Phaneritic texture.  Missing 3 feet section from 50-53 feet.			tensen Wire Line	to Well Construction  Not Applicable
55		4	2	33	20	Becomes cark yellow brown (10yr 4/2), friable			0	Refer to
60		5	2	00	50	at 55 feet.  Wet, meaium dork gray (4n4); quartz—filled fracture at 57 feet.		NSW;35'E fracture		
65		6	0	20	0	Grayish block (2n2), friable gravel—sized fragments up to 1", 3"—wide fracture infilled w/white quartz.				

ACW

Fullerton, Ca.

CHECKED BY

DATE 10-12-90

C						ROCK BOREHOLE LOG		BORING	NO. MW-2			
						SITE NAME AND LOCATION Gregory Canyon, near Pala,	Califor	SHEET	3 0	er 4	1	
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE PIECES LARGER O THAN 2X CORED O DIAMETER 20	-	ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVED ROCK STRUCTURE(S)	SAMPLER AND BIT		BLOWS/FOOT ON CASING	
0		7	5	100	40	Moist, grayish black (2n2), "salt—and—pepper" texture, medium grainea, nighly fractured.  Becomes very moist, acrk gray (3n3), with quartz infilled fractures, iron—stained 68 to 71 feet.  Becomes grayish black (2n2), with quartz—infilled fracture, moderate orange pink (5yr 8/4), highly fractured.		N30W;45'NE fracture N30W;45'NE fracture N5W;52'E fracture				
5		9	4	100	50	0.2" wide iron-stained, quartz-filled fracture at 77 feet. 2"-wide grovelly quartz infilled fracture.		N40E:40°E frocture  N80W;62°S iron—stained frocture  N5W;56°S frocture  N5W;30°E frocture	61	Summary ————		
5		10	2	70	20	Wet, moderate yellow brown (10yr 5/4), quartz vienlets & silty sand fracture infilling.  Becomes grayish black (2n2) without quartz veinlets, at 82 feet.  Gravel—sized fragments, highly micaceous with biotite flakes.		N80E;62*S pyrite—bearing fracture	nsen Wire Line Coring		Applicable -	
0 -		11	3	90	60	Grades into more competent bedrock at 87.0'. Moderate yellow brown (10yr 5/4) to dark gray (4n4). Medium light gray (6n6) "salt—and—pepper" texture with conchoidal fracturing, moderately fractured.		N80W;80°E	Christense	Refer to W	-	
5		12	4	100	90	BONSALL TONALITE (Kb) unweathered  Medium light gray (6n6), aphanitic texture, highly fractured iron-stained with calcite infilling.		N5W;74*W				
		13	3	100	95	0.5" -wide quartz-filled fracture.		N30E;41°W fracture N5W;85°E fracture				
00		14	4	100	95	Pyrite-bearing and iron-stained fracture.  2"-wide filled fracture.		N82°E;42N fracture N5W;42°W fracture		•	<b>V</b>	

<b>'</b> '		W	aste	ма	noge	ment, Inc.				000000					
C		•				ROCK	BOREHOLE LOG			BORING GM	NO. W−2				
	·						SITE NAME AND LOCATION	Callf-	rnia	SHEET		•			
			COR	ES.			Gregory Canyon, near Pala,	Califor	nia	<u></u>	4 o ⊨	F 4		1	1
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER THAN 2X CORED DIAMFTER	RECOVERY	ROD		SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSE RO STRUCT	RVED CK URE(S)	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING		
<del></del>					<u> </u>			Kiiiii			П	П		nc.	
		15	- 3	100	100				N5W;30'\ frocture	Y			-	ling, Co.	
105		16	1	100	100	Medium light gro	by (6n6), opnanitic texture, ured at 103.0', iron—stained.		N80E;20 fracture	N	V		<b>V</b> -	Drill erton	-
						moderately fract Bottom of hole			fracture					LOGGED BY Amr DATE 10-12-90 CHECKED BY ACW DRILLING CONTRACTOR H-F Drilling, Inc.	
														07	

o	GMW-2

Elevation Ground Level 322.56

324.640 feet

## Start Finish Time Date Time 8/14/90 8/17/90 8/13/90 9/5/90

Q	=		\$∘ <b>=</b>
Time	рН	Spec. Cond.	Temp (°F)
10:00	7.65	930 UMhos/cm	72.2
10:15	7.38	909 UMhos/cm	70.8
10:25	7.37	902 UMhos/cm	70.4
10:30	7.38	903 UMhos/cm	71.1
10:40	7.35	919 UMhos/cm	71.9

Comments:	Depth	to	water	after	drilling:	
00.1171.701.1131	19.50'	(8	/14/9	0)		

Screen: S1 4.25" Diam. Open Hole

Filter Pack: None

Bentonite Seal:

4" Diam. Open Hole

Grout Seal: 0-50.0 feet Enviroplug (Bentonite)

- 110

- 120

106.0

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ΣÍ NSPECTOR:

CHECKED BY:-

California. Pala, near Canyon, 012004

PROJECT:

DRILLING CONTRACTOR H-F Drilling.

ACW M. Am

Ж CHECKED 10-12-90 OCCED BY

C						ROCK BOREHOLE LOG			BORING	NO. SMW-			
					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	SITE NAME AND LOCATION Gregory Canyon, near	Pala, C	alifornia	SHEET	2 0	F 2		
DEPTH IN FEET	SAMPLE INTERNAL	RUN ND.	NO. OF CORE- PIECES LARGER O IHAN 2X CORED O DIAMITER 20		ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSE RO STRUCT	CK	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	
30	6					CLAYEY SAND (SC) w/1"-diameter leucogranodiorite grovel, moderate brown (5yr 4/6). Easier drilling at 30'.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	,					H-F Drilling, Inc.
35	7	Applicable	Applicable	Applicable	Applicable	Cobbles & boulders	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			Sampler	tion Summary	ole	NG CONTRACTOR
40	8	Not Appli	Not Appli	Not Appli	Not Appli	sightly moist; yellowish gray (5yr 8/1)	A A	Not Ap	plicable	- Split Spoon Sar	to Well Construction	Not Applicable	DRILLING
· 45	9					SAND (SP) 1.0' thick, light brown (5yr 5/6); moist; very micaceous fine sand at 43 feet.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$				Refer t		WOA
- 50						CLAYEY SAND (SP) Very difficult drilling at 49 feet. Bottom of boring at 50.0 feet. (Refusal)	A A A A A A A A A A A A A A A A A A A						M. Amr
55	A THE REAL PROPERTY OF THE PRO		-										Amr.
. 60	Company of the compan	The second secon	interpretation of the control of the										LOGGED BY

ft.

Gregory

PROJECT:

California.

Pala,

CHECKED

AC₩

ВХ CHECKED 10-12-90

Y				•	<u>~_</u> _	ROCK BOREHOLE LOG		BORING	NO. MW-4		
						SITE NAME AND LOCATION Gregory Canyon, near Pala,	Califor	SHEET	2 of	- 4	
DEPTH IN FEET	PERCENT	RUN NO.	NO. OF CORE- PIECES LARGER O FHAN 2X CORED O PLAMETER 37		RUD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVED ROCK STRUCTURE(S)	118	CASING TYPE BLOWS/FOOT ON CASING	
30							00000000			-	H—F Drilling, Inc. Fullerton, Co.
35						Fine sand, moderate alive prown (5yr 4/4), encountered at 35 feet.	000000000000000000000000000000000000000				DRILLING CONTRACTOR
40	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Fine to medium sand from 40 feet.	000000000	Not Applicable	Rotary Cuttings	mary	DRILL
45		Z	Z	2	2	Fine sand, light olive groy (5yr 5/2).	000000000000000000000000000000000000000		Air	onstruction Summary Applicable	ACW
50						Difficult drilling from 47.0'.  BONSALL TONALITE (Kb) weathered  Moist, light brown (5yr 5/6) bedrock, with "salt— and—pepper" texture, highly fractured. Hornblende and quartz crystals.	, ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;			— Refer to Well Con	Amr M. Amr 10 CHECKED BY
55	<b>V</b>	T		¥	Y	Iron—stainea					Ar 10-12-90
60		g	2	100	10	Medium grained crystals of hornblende, biotite and quartz, from 57 feet.  Becomes dark yellowish orange (10yr 6/6), friable, grus 0.5" thick, with calcite.  Yellow and black mottling.			Wire Line Coring⊶		LOGGED BY
65		2	4	100	70	Iron—stained fracture at 65 feet.		N5W;52W iron—stained fracture	Christensen		

V		Γ				ROCK BOREHOLE LOG		BORING	NO. MW-4	
				····		SITE NAME AND LOCATION Gregory Canyon, near Pala, (	Califor	SHEET	3 of	4
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 20		RQD .	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVED ROCK STRUCTURE(S)	SAMPLER AND BIT	BLOWS/FOOT ON CASING
70		3	4	100	70	Medium gray (5n5), moderately fractured with phaneritic texture, appears iron—stained with silty sand fracture infilling.				
75		4	3	100	40	Moist, dark yellow orange (10yr 6/6), very soft calcite zone at 72 feet.  Very moist, pale olive (10yr 6/2), highly fractured		N6W;42°E iron-stained fracture		
80		5	5	100	90.	with abundant quartz veins, calcite—infilled fractures with solution pitting at 75 feet.			ing —	nary
	Not Applicable	6	5	100	50	Weathered fracture is dark orange brown, near vertical, fracture is weathered at 80 feet.  Greenish gray (5yr 6/1), iron—stained fracture with silty sand infilling at 82 feet.		N80E;83*N fracture N5W;80*W fracture	ensen Wire Line Coring	il Construction Summary  Not Applicable
85	2	7	4	100	60	Dark gray (3n3); wet with iron—stained fractures.		N30W;70'W fracture		See Well
90 95		8	6	100	75	BONSALL TONALITE (Kb) unweathered Fracture infilled, wet, medium gray (3n3), aphanitic texture highly fractured.  Quartz dike 0.2"—wide with zoned hornblende and biotite inclusions at 92.0 feet. 1"—wide fracture zone with calcite infilling		N5W;42'W iron-stained fracture N5W;55'W fracture N17W;42'E fracture N5W;42'W fracture		
100		9	4	100	45	ot 94 feet.  0.1" -wide colcite-filled frocture.		N80E;64'N fracture N79E:74'N		
		10	)	10	0 30	S. Had Solicite Had Hookard.		fracture		

Fullerton, Ca.

ACW

CHECKED BY

10-12-90

						ROCK BOREHOLE LOG			BORING	NO. SMW-			
						SITE NAME AND LOCATION Gregory Canyon, near	Pala, (	California	SHEET	4 OF	F 2	-	
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 20		ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	RC	ERVED OCK TURE(S)	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	
105		11	7	100	90	Wet, medium gray (3n3), aphanitic texture, highly fractured, with calcite infilling fracture. Ironstained fracture 0.1"—wide Calcite infilled fracture. Conjugate fractures 2" apart. 1"—wide Calcite filled fracture.		N50E;49 fracture N80E;52 fracture N50E;50 frocture N5W;45 fracture N58E;50 fracture N80E;60	2'S 2'S W 2'N	Line Coring	uction Summary	Applicable Liii Liii	CONTRACTOR H-F Drilling, Inc.
110		12	5	100	95	1/2"—wide iron—stained fractured infilled with gray flourite & calcite.  Iron—stained fracture		fracture N80E;44 frocture N80E;44 frocture	SS SS	Christensen Wire	to Well Construction	Not Applie	DRILLING CONTE
115		13	5	100	95	Dork yellow orange (10yr 6/6) iron—stained, calcite—filled fracture.  Calcite—filled fractures.  Bottom of boring at 116.0 feet.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	N8W;55 fracture N70E;45 fracture	E 5'S 5'N		Refer		۵
120													
125													Amr M. Amr
130			miner i didenti.										LOGGED BY
135	A CONTRACTOR OF THE CONTRACTOR												

Fullerton, Co.

ACW

CHECKED BY

DATE 10-12-90

f†

T.D.

ACW CHECKED BY:

NSPECTOR:

California, Pala, Canyon, Gregory

PROJECT:

V		•				ROCK	BOI	REH	OLE	LOG	\	WELL	GMP			
							1		AND LOC				BORING			
								<del> </del>	Canyon, r				1	IP-		_
								NG ME	THOD: A	r Rotary —inch (0			SHEET		ae 7	
		5	See F	Plat	e 3		11000	DIAME		-inch (0			DRIL		OF 3	-
			or L				<u> </u>			(1		<del></del>	START		INISI	
							WATER	LEVEL	76.0	63.88		1	TIME		TIME	
							TI							_		.
							DA	TE	7-3-90	8-6-90		<u> </u>	DATE	+	DATE	
AUTAG	d: M.S	.L.			ΕL	EVATION: 460.29	CASING	DEPTH	48.0			<del> </del>	7-31-90	Ł	-2-9	
DRILLI	NG: M	obile	B-6	1XD		ary w/Christensen			ACE CON	DITIONS:	Soil &	: Boulder	s	_1		$\dashv$
ANGLE											····		lithology f	rom		$\dashv$
			D TC	100	l i C ,	Not Applicable										
JAMIFE		MME			UE:	Not Applicable		l	ground st	urrace; w	ater leve	is from	top of ca	sing	in fe	et
EET	RECOVERY		COR			-						0.000	-nuch	E	<u>بر</u> ا سِا	
DEPTH IN FEET	RECC	9. 2.	NO. OF CORE- PIECES LARGER THAN 2X CORED DIAMETER	₹.		5	SOIL DES	CRIPTIO R	N		BO L	RC	RVED OCK	SAMPLER AND	CASING TYPE	ON CASING
PTH		RE N	7 × × × ×	RECOVERY	RQD		ROCK LÏ		Y		SYMBOL	STRUCT	TURE(S)	LER.	SING	Z
30	PERCENT	- 2		REC										SAMP	2 8	10
		<u> </u>				<u> </u>		<del>,</del>	<del></del>							-
***************************************			1	Ti	1	COLLUVIUM (Qc)					000		i	i		计
	•	🖣	#	1	•	Crystolline boulde	ers in si	Ity fine	to medic	ım sand	000	ı	<b>.</b>	4	4	₽÷
						matrix, light brow	wn (SYR	5/6).			107					17
											500					
						Silty sand, yellow	ich arm	, (Bur :	7 /2\							1 1
5						311() 30/10; 70/101	risii gioj	y (3y,	1 21.							-
J											500					
			1													
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10											$\nu - \nu$				mary	
						Increasing fine to	റ നളവ്ല	m sana	dork or	av (3n3)	000				E I	-
						little yellow quar	tzitic fin	e to m	edium gro	ay (5n5), ay (5n5)	DIOI				Sum	
	ë	<u>e</u>	<u>a</u>	ole	Se .	at 12 feet.					$-\nu_{\perp}$				1 1	<u>.</u> _
	Cot	CO	cat	col	CO						- 5 ° 5 1			Se	cti.	<u> </u>
	Applicable	Applicabl	Applicable	Applicable	Applicable							Not Ap	plicoble	Cuttings	str.	Applicable
15	- ¥	3 1			1	Becomes grayisn	black (	(2n2), t	race yello	w			1	Cr		
	Not	Not	Not	Not	Not	quartzitic sand			•		_ K O _ \				Well	ž ]
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											1071				유	
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						+					$b^{\vee}a$				8	[]
20						Becomes coarse	sand, r	nedium	dark ara	v (4n4).	000					
					!	little quartz frag					P 201					
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			-								$h^{\vee}$					
											501					
											D ~ O					17
25											600					
						Slow drilling of	28 O fa-				500					
	1 1	1			1	Slow drilling at :	20.0 166	ι.			$b \sim c1$	i			111	17
		🕹	<u>.</u>	<u> </u>	<b>i</b>	Contains hornble	nde ala	ninalass	fraaman	te and	000		1	⊥		_11

DATE 10-12-90 CHECKED BY

V			2010			ROCK BOREHOLE LOG		BORIN	G NO.		
						SITE NAME AND LOCATION Gregory Canyon, near i	Pala, (	SHEET California		F 3	
DEPTH IN FEET	PERCENT RECOVERY	RUN ND.	NO. OF CORE- PIECES LARGER O ITHAN 2X CORED O		ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSERVED ROCK STRUCTURE(S)	SAMPLER AND BIT	CASING TYPE BLOWS/FOOT ON CASING	
30		oble	sbíe	oble		Matrix becomes medium gray (5n5).	000000000000000000000000000000000000000				H-F Drilling, Inc. Fullerton, Ca.
35	A CALLESTON OF THE PROPERTY OF	Not Applicable	Not Applicable	Not Applicable	Not Applicable	ncreasing coarse sand, some small wood fragments.	00000000000		Cuttings		DRILLING CONTRACTOR
40	Applicable	1	2	66	10	BONSALL TONALITE (Kb) weathered Slightly moist, dark yellow brown (10yr 4/2), highly fractured, 0.5-1.0' fracture spacing.	000	N5W,60'E		Summary	
<b>45</b>	Not App	2	1	80	10	missing 46-47 feet. Fracture infilling. Silty sand and iron-staining.		fracture N80E;66'N fracture N5W,62'E	Coring	er to Well Construction Not Applicable	Amr CCKED BY ACW
55		3	2	100	115	Rock sample collected for thin section analysis at 51 feet. Classified as a Quartz Gabbro, see sample GMP-1-51, in Appendix F.  Medium grained plagioclase crystals w/hornblende & biotite, vein filled w/calcite.		fracture NSW,71°E	Wire Line	Refer	Amr 12–90 CHE
<b>50</b>		4	4	60	30	Moderate yellow brown (10yr 5/4), Poikilitic texture at 55 feet.  Wissing 56-58 feet.  White chalky material in-filling fracture at 60 feet.		fracture	Christensen		LOGGED BY DATE 10-
55 		5	5	000	80	Moist, meaium Gray (5n5), Ironstained. 2" - wide in - filled vein, slightly moist, light brown (5yr 6/4).		N5W,80°E fracture			

V					· - J	ROCK BOREHOLE LOG			BORING	NO.				
						SITE NAME AND LOCATION Gregory Canyon, near	<sup>D</sup> ala, (	California	SHEET	3 o	F 3	3		
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER CO (HAN 2X CORED CO DIAMITER 23		KQD .	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL		RVED CK URE(S)	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING		and the state of t
70		6	5	90	80	Médium gray (5n5), highly fractured. With hornblende, and "salt—and—pepper" texture, dark gray (3n3) at 70 feet. iron—stained, calcite—infilled fracture, white (9n9).		N80W;45 fracture N84E;74 Ironstain fracture.	N ed	ne	on Summary		OR H-F Drilling, Inc.	Fullerton, Ca.
75	. Not Applicable	7	6	100	80	Medium grained plagioclase with biotite, 1/8"—wide vein in—filled with white calcite.		N6W;74°E frocture N5W;62°E infilled		Christiensen Wireline		Not Applicable	DRILLING CONTRACTOR	
8u		8	5	90	70	Rock sample collected for thin section analysis at 76 feet classified as quartz gabbro, see sample GMP-1-76 in Appendix, F.  1.0'-wide sandy silt in-filled fracture, yellowish gray (5yr 7/2), white (9n9). Vein in-filling.  Medium gray (5n5).  Very friable.  Bottom of boring at 81.0 feet.		frocture N6W;72'E frocture	ī	majora kapangan penganan manganan mananan manganan manganan manganan manganan manganan manganan manganan mangan	Refer to		DRIL	. 1
85														CHECKED BY ACW
90			The state of the s										Amr M. Amr	10-12-90 CHE
95			- Augusta	Electrical de la constant de la cons				debeter finden de la companya de la		The state of the s			LOGGED BY	DATE
100														

Well Nong No. X-Re N SUMMARY evation Ground Le	f:		ately 4.			are a analysis of control of
Construction  Task  Orilling  Geophys Logging:  Casing:  Casing:  Cementing:  Development:	Time			ish Time	INSPECTOR: Amr M. Amr	CHECKED BY: ACW
Well Develop Depth to water 6 Depth to water 6  Development Q= Time pH	2.32 (8 3.88 (9 Data:	/5/90)	Som Terr	np ('C)	ISNI	ala, California.

LOCATION: Gregory Conyon, near

PROJECT: CA 012004

	7			ONSTRUCT	ON SUMMARY	
ے د		Survey Coords: _			Elevation Ground Le	
$\langle$	1 1				Top of Cas	ing46
10		Drilling Sum	nary:		Construction	Time Log Start
	A A	Total Depth 81.	O feet		Task	Date Time
20	h h	Borehole Diamete Casing Stic—up I Driller ———————————————————————————————————	r 10 Inch	es	Drilling	7/31/90
		Casing Stic-up I	Height: 1.28 fee	et		
	ИИ	Driller Drilling	c			
30	n n				Geophys Logging:	
	и и	Ria Mud Rotor	y/Air Rotory		Casina:	
_		Rig <u>Mud Rotor</u> Bif(s) Tungsten	Bit.			
40	d N					
		Drilling Fluid: Mu	0/Air		Filter Placement:	
50		Protective Casing	5" Steel Con	ductor	Cementing:	
50					Development:	
		Well Design	& Specific	enoir		
60 — <b>▼</b>		Basis: Geologic I Casing String (s	- ,	~	Well Develop Depth to water 6	
70		Depth	String(s)	Elevation	Depth to water 6	3.88 (9/5/90
. •		+1.28 - 41.1	C1			
		I .	1	(	1	

Casing: C1\_5" Steel Conductor Screen: S1 5" Diam. Open Hole S2-

Filter Pack: None Grouf Seal: 0-41.1 feet Enviroplug (Bentonite) Bentonite Seal:-

% 100						
K 80 E	-					
C 60	-					
R 80 E 60 O 40 E 20						
R 20	-					
Y 0		20	40	60	80	100

Comments:	Depth to water after drilling:
Oommen.	69.0' feet below grade. (8/2/90)

.D. 81.0

90

100

110

120

f†.

H-F Drilling, DRILLING CONTRACTOR

Fullerton,

ACW

Amr CHECKED 10-12-90

Amr M. OGGED

Y						ROCK BOREHOLE LOG	<del></del>		BORING	NO.			
						SITE NAME AND LOCATION Gregory Conyon, near	Pala, C	California	SHEET	2 0		τ .	
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER CO THAN 2X CORED CO		KQD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSE RO STRUCT	CK	SAMPLER AND BIT		BLOWS/FOOT ON CASING	
30		•				Becomes brownish gray (5yr 4/1), at 30 feet.	0000000						H—F Drilling, Inc. Fullerton, Co.
35		Not Applicable	Not Applicable	Not Applicable	Not Applicable		000000000000000000000000000000000000000		lica ha	— Cuttings	***************************************		DRILLING CONTRACTOR
40						Increasing medium to coarse sand at 40 feet.	000000000	Νου Αρ	Silvable	TRANSMINING TO THE RESIDENCE AND ADDRESS OF THE PROPERTY OF TH	Summary	7	DRILLI
45	Applicable	4	0	0	0	BONSALL TONALITE (Kb) weathered	0000000			<b>V</b>	Construction	Not Applicable	ACW
50	Not	2	0	0	0	Light gray (5yr 5/2), phaneritic texture, highly fractured with iron—stained fractures.					to Well		mr ED 8Y
30		3	0	100		Missing 52.5 to 56.0 feet.				Coring	Refer		Amr M. Amr
55		4	0	0	0					en Wire Line	***************************************		10-12-90
60		5	0	0	0	Missing 56.0 to 60.5 feet.  Rock sample collected for thin section analysis at 58 feet. Classified as a Alkali Feldspar Granite Porhyry, See sample GMP—2—58, in Appendix F.		N30°W		Christensen			LOGGED BY_ DATE_
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	6	0	100	0	Switched to tungsien bit to improve recovery at 60.5.  Moderate yellow brown (10yr 5/4), weathered w/1/4"—wide porphyritic dike.  Ploty weathered abundant biotite Becomes dark gray (3n3) at 63 feet.		trending	dike				_
65	Y	7	0	100	0	LEUCOGRANODIORITE (Klm) light brown (5yr 6/4) dike material.				•	T	<b>Y</b> -	

C		1				ROCK BOREHOLE LOG			BORING	NO.			
	<u></u>			<u> </u>		SITE NAME AND LOCATION Gregory Canyon, near	Pala, (	California	SHEET	3 o	)F	3	
DEPTH IN FEET	PERCENT RECOVERY	1 - 1	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMPTER 3	RECOVERY	ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL		RVED CK URE(S)	SAMPLER AND BIT		BLOWS/FOOT ON CASING	
70		8	0	100	0	BONSALL TONALITE (Kb) Moderate yellow brown (10yr 5/4) phaneritic texture, nignly fractured, iron-stained fractures.						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	H-F Drilling, Inc.
		9	2	100	20	LEUCOGRANODIORITE (KIm) Light brown (5yr 6/4), porphyritic dike vein, infilled with silty sand. Drilling difficult at 70.5 feet.					Summary		DRILLING CONTRACTOR
75	Not Applicable	10	3	90	25	Porphyritic texture, highly fractured		N15W;62 fracture		n Wire Line Coring	Construction	Applicable _	DRILLING
St.	0N	11	3	75	20	Meaium light gray (6n6) aphonitic texture, vertical micro fractures.  Very light gray (8n8), phaneritic texture				Christensen	Refer to Well		
5		12	3	100	30	Less weathered, fine to medium phaneritic texture  Bottom of boring at 87.0 feet.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	N20W;5 fracture			<b>V</b>		Amr
٥	*		- American de la companya de la comp							the state of the s			Amr Ar
5				THE PROPERTY OF THE PROPERTY O						and the second s			OGGED BY
100													

	Well No.	GMP-2
Boring	No. X-Ref	

## MONITOR WELL CONSTRUCTION SUMMARY

Elevation Ground Level Approximately 436.52 Survey Coords: \_\_\_\_\_ Top of Casing 437.640 feet

Drilling Summary:	Construction	Time Sto		Fin	ish
Total Depth 87.5 feet  Borehole Diameter 10 Inches  Casing Stic-up Height: 1.12 feet  Driller H-F Drilling  Fullerton, Co	Task Drilling Geophys Logging:	<u>Date</u> 7/25/90	Time	<u>Date</u> 7/30/90	Time
Rig Mud Rotory/Air Rotory Bit(s) Diamond/Tungsten	Casing:				
Drilling Fluid: Mud/Air Protective Casing 5" Steel Conductor Well Design & Specifications	Filter Placement: Cementing: Development:			7/26/90	

Well Development:

Development Data:

Time

% 100

Ĉ 60

٧ ٤ 40

R 20

80

Depth to water 82.24' (8/17/90) Depth to water 83.74' (9/05/90)

Spec. Cond.

40

TIME (minutes)

Temp (\*C)

Basis: Geologic Log  $\chi$  Geophysical Log Casing String (s): C=Casing S=Screen

D	ept	h	String(s)	Elevation
+1.12		45.0	<u>C1</u>	
45.0	_	70.0	<u>S1</u>	
70.0	_	87.5	S2	
			······································	
	_			

Casina	C1	5"	Steel	Conductor

- 20

- 50

- 60

- 70

- 100

- 110

- 120

T.D. 87.5

5" Diam. Open Hole Screen: \$1-4" Diam. Open Hole

Filter Pack: None

Bentonite Seal: -

ft.

	,	 			
Comments:		water	ofter	drilling:	

83.36' Below Grade (7/30/90)

Amr Σ Amr INSPECTOR:

> Pala, California. Gregory Canyon, near

PROJECT:

CA 012004

LOCATION:

						ROCK	BOI	REH	OLE	LOG	V	VELL	GMP		)
				<u></u>			1		AND LOC			,	BORING		
										near Pala,	Califor	nia	<u> </u>	IP-3	
									THOD: A				SHEET		
		(	Se <b>e F</b>	) (a +	٠ ٦		HULE	DIAME		)—inch (0- 25—inch			DRIL		OF 3
			or L				<b></b>			-inch (70			START	<del></del>	INISH
							WATER	LEVEL	~~~~~	DRY	0, 10	1	TIME	-+	TIME
							TI		70.0			<del> </del>	11147	_	111912
							DA		8-7-90	9-5-90	····		DATE	+	DATE
DATUM	ı. uc	;			E 1 -	EVATION: 469.26	CASING		+	3-3-30		<del> </del>	8-3-90	1	-7-90
			- 3-6			tary w/christensen	<del> </del>	Y		IDITIONS.	Coil P	Davidor	ł	1 0	, 50
			6 0-(	)   \ \	/ 10	tdry w/ christensen	Coring			IDITIONS:	·········				····
ANGLE	<del></del>							Note:		····			lithology f		
SAMPL	Е НА	MME	ER TO	RQ	UE:	Not Applicable			ground s	urface; w	ater leve	ls from	top of cas	sing	in fee
E	VERY		COR	ES		]								B11	
OCPTH IN FEET	(00)		RE-	<b>&gt;</b> -		S	SOIL DES		N		링		RVED OCK	AND	CASING TYPE BLOWS/FOOT ON CASING
Ξ.	æ Z	z	នង្គ័	JVER.	800		O ROCK LE	R THOLOG	Y		SYMBOL		TURE(S)	S.	SING WS
900	PERCENT RECOVERY	J.S.	ECES PA 2	RECO	α	•		111000	•		"			SAMPLER AND BIT	2 85
	<u>~</u>		NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 20		<u> </u>			<del></del>						v	Ш
	i		1	Tī		BONSALL TONAL	ITE /v:	2)	horod	·····				1	111
		4	A	1	4	Silty sand, very Medium grained,						Not Ap	plicable	•	│ ♣ │ ♣
						Medium grained,	phoneri	tic, tex	ture.						
															-
_					i										
5															
					<b>!</b> .	More fine to coo (5yr 6/1) at 6	orse san	id, light	t brownish	n gray					
					1	(Jy) 0/1/ 00 0	.001,								
						Little fine gravel	· mediu	m arav	(505) at	O foot					
10						citae fine graver	, medici	ii gicy	(303) 00	5 1661.					
10														_	mar
					1						<b>*****</b>			Circulation	Sch
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	able	g	oble	aple	ğ									2	i ja
	olic	Applicable	Ë	Applicable	Applicable									oir (	onstuctic Applicab
	Not Applicable	Ap	Applicable	Ap	\delta	, ,								0	Constuction t, Applicable
15	ot	Not	Not	Not	Not	Increasing fine a	ingular i	grovei.			<b>****</b>			Cuttings from	1 10
			2Z 1	Z	Z									S	∏e Z
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														tt;	1 11
														0 ~	Refer
20			1			Becomes fine to		n sand	; pale yel	low brown	·				
						(10yr 6/2) at 2	o reet.								
					1										
25															
						ļ									] 🖟 ] 🛓
	ıT	i T		₹ 1	1	Fine to medium	sand				_ XXXXXX			; <b>T</b>	1 V 1 V

DRILLING CONTRACTOR H-F Drilling, Inc.

Fullerton, Ca.

LOGGED BY Amr Amr DATE 10-12-90 CHECKED BY ACW

V					·····	ROCK BOREHOLE LOG		BORING NO.		
***************************************						SITE NAME AND LOCATION Gregory Canyon, near Pala,	California	SHEET	rЗ	
DEPTH IN FEET	PERCENT RECOVERY	RUN NO.	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 30		ROD	SOIL DESCRIPTION OR ROCK LITHOLOGY	OBSE	CRVED DIL CONTROL OF CRAND BIL CAND CAND CAND CAND CAND CAND CAND CAND	CASING TYPE BLOWS/FOOT ON CASING	
30		Applicable —	Applicable	Applicable —————	Applicable	Becomes friable, moderately fractured brownish gray (5yr 4/1).		Air Circulation		JR H-F Drilling, Inc. Fullerton, Ca.
35		Not Appl	Not Appl	Not Appl	Not Appl			Cuttings from A		DRILLING CONTRACTOR
40		4	5	100	60	Becomes medium gray (5n5), moderately fractured from 40—55 feet. Highly fractured with Quartz vein infilling.	N40E;66' frocture N50W;70' frocture		Summary	9
45	Not Applicable	2	4	100	75	Becomes highly micaceous, iron—stained at 45 feet.  Poikilitic texture with hornblende and feldspar crystals at 47 feet.  Becomes medium dark gray (4n4).	N56E;,60 fracture	S 1/8" .u.	well Construction  Not Applicable	D BY ACW
50		3	3	100	60	Becomes very light gray (8n8), quartz vein with 1/4"wide biotite flakes. 1/8" nornblende crystals, porphyritic texture.	calcite fi	Wire Line		Amr Amr 2-90 CHECKED
55		4	6	100	70	Becomes very friable, medium gray (4n4).  Light brown (5yr 5/6), iron—stained highly fractured from 56 to 68 feet.  Becomes grayish black (2n2) fracture.	N54E;56' fracture N60E;66' fracture			LOGGED BY  DATE 10-1
60		5	5	100	75	Becomes medium dark gray (4n4), coat quartz—filled veinlets.				07
65	1	<u> </u>	<u></u>		<u> </u>	Very light gray (8n8), porphyritic dike.	N69'E;66	· w		

V					<u>~</u>	ROCK BOREHOLE LOG			<del></del>	NO. MP		
						SITE NAME AND LOCATION  Gregory Canyon, near Po	ala, C	alifornia	SHEET	3 of	- 3	
DEPTH IN FEET	PERCENT RECOVERY	RUN ND.	NO. OF CORE- PIECES LARGER O THAN 2X CORED O DIAMETER 20	RECOVERY U	KOD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	OBSE RO STRUCI	CK		CASING TYPE BLOWS/FOOT	
	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	6	;	100	10	Becomes light gray (8n8), medium grained, highly fractured.		N58W;40°	W			Drilling, Inc.
70		7	0	100	0	BONSALL TONALITE (Kb) unweathered Medium gray (5n5), aphanitic texture, highly fractured. Very hard; light gray (7n7). Very hard, at 70 feet.		N5W;72'E iron—stail fracture N80E:70'S	3	Coring	Summary	)R HF
	Not Applicable	8	1	100	80			iron—stoil fracture N32'E;68' iron—stoil slightly in fractured	Ε	Wire Line	Well Construction Not Applicable	NTRACTO
75	Not A	9	2	100	40			froctured N32'E;62' frocture		Christensen		DRILLING CONTRACTOR
		10	1	25	80	Fractured, iron—stained.		N5W;61°W frocture		Ch.	— Refer to	DRI
80						Bottom of boring at 81.0 feet.				<b>V</b>	<b>V V</b>	,
85												W.A.A.
												Amr
90			· ·									Amr M.
95												60 BY
					The state of the s							LOGGED
100												
												1

Fullerton, Co.

DATE 10-12-90 CHECKED BY ACW

ft.

81.0

Gregory Canyon, near Pala, California.

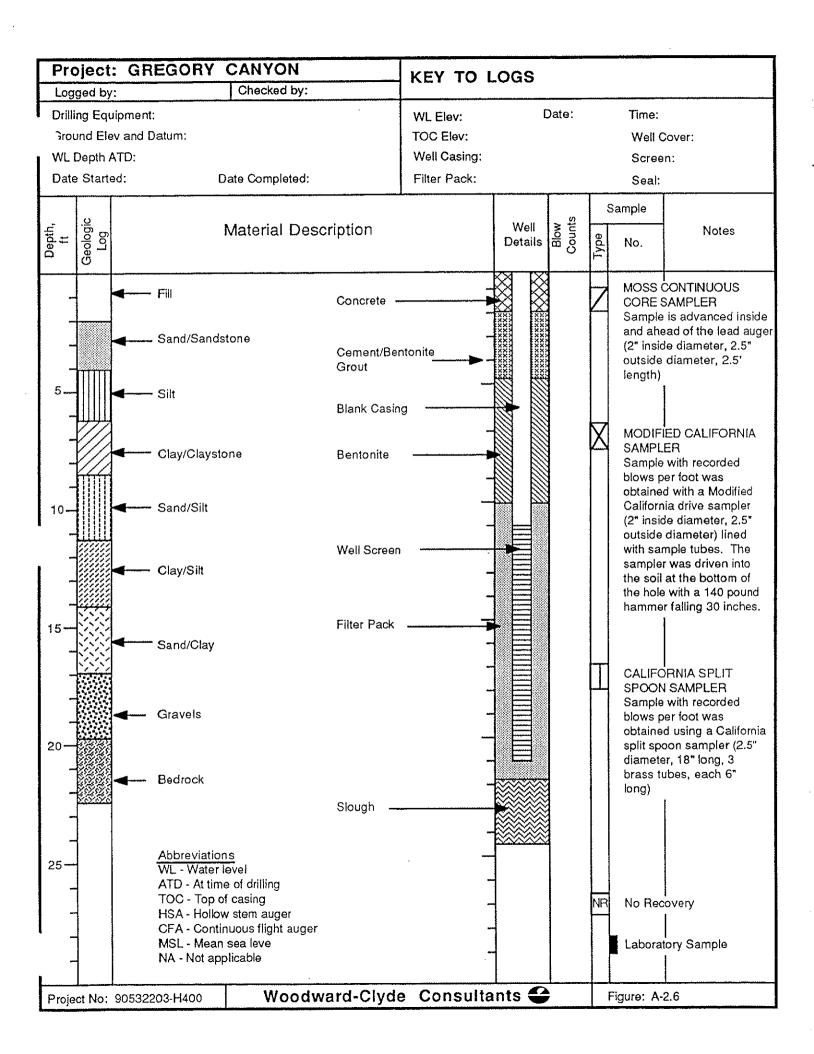
Amr

Σ

NSPECTOR:

PROJECT: CA.

012004



Pro	oject	: GREGORY		Log of Tes	t Bori	na N	o:	B-1	
Log	ged by	: RKS	Checked by: 201	5					
Drilli	ng Equ	uipment: Canterra CT	212, Air Rotary, 6.5" Tricone						:
٦ro۱	und Ele	ev and Datum: Approx	ximately 369', MSL						
WL	Depth /	ATD: None encounter	red						
Date	Starte	ed: 10-15-91 D	ate Completed: 10-15-91						
						/A	,	Sample	
بر ج	ogic g	1	Material Description		Blow Counts	( E	6	<u> </u>	Notes
Depth, ft	Geologic Log		·		m 8	OVM/OVA (ppm)	Туре	No.	
	0	COLLUVIUM				-	-	<b>!</b>	
-			n, clayey sand (SC)		-				No samples retained. Logged
_					4				using drill cuttings
_		Cobbles/gravel			_				
		Copples/graver			1				
5									]
					]				
		Cobbles/gravel							
_	1				7				
_	1				1				
-		Dry reddish broy	vn, silty, fine-grained sand (SM)		1				
10-	-	Dry, 1000isii bibi	m, only, and granted date (only	•	7				
' -	ł				+				
_	-				-				
-					-				
_					_				
15-									
'` _									
									1
-							İ		
-					1				
-		Leucogranodiorit	e boulder		1				
20-		Bottom of boring	at 20 feet		1				
-					1				
-	1	Boring backfilled placement	with 3/8-inch bentonite chips hy	drated during	4				
-	-	pracement			-				
-	-				4				
25-	4				4				
<u> </u>					4				
					1				
]									
4 ,					1				
	1				1				
Proie	ct No:	90532203-H400	Woodward-Clyd	e Consultar	its 🚭			Figure: A-	2.7

<del></del>				<del>.</del>				
		: GREGORY CANYON :RKS   Checked by: 4/7/	Log of Monitoring We	ell No:	WCC-2 (B-2)			
	ged by	ipment: Canterra CT 212, Air Rotary, 6.5" Tricone	Mil Clave Day Date: 10-	17-91 Time:	10:00 am			
		ov and Datum: Approximately 344', MSL	WL Elev: Dry Date: 10-17-91 Time: 10:00 am  TOC Elev: 346.84' Well Cover: Mor					
		ATD: None encountered	Well Casing: 3" diam., Sch 40 PV		n: 0.020" slotted			
		ed: 10-16-91 Date Completed: 10-17-91	Filter Pack: #2/16 Lonestar sand		Bentonite chips			
ţþ,	g g	Material Description	Mell Blow Counts OVM/OVA (ppm)		Notes			
Depth, ft	Geologic Log	·	Details 🛱 🖔 🛇	No.				
· · · · · · · · · · · · · · · · · · ·	U	OOLLING						
-		COLLUVIUM  Very dense, dry, reddish brown, silty, coarse-grai	ined 😽 🚫					
-		sand (SM) with occasional fine gravel some mica						
_			- XXX					
-								
5		- • • • • • • • • • • • • • • • • • • •	—××× ×××	_				
		Moist	1888 888 60/	B2-5.5				
_			- XX XX 7"	02-5.	1			
_		Occasional boulders	-8 8 1					
		Cooking Database						
10-	]		_					
١ .			113/	B2-10	.5ft			
_								
_								
		Leucogranodiorite boulder(s)						
15								
15	]			B2-15	 .3ft			
•	]	Leucogranodiorite boulder(s)	9"		Ī			
			7111					
	1							
-	1		7					
20-								
-	1		7 1 1 1					
-	<del> </del>			П	·			
-		WEATHERED BEDROCK (TONALITE)	<b>-</b>   5"	B2-22	.9ft			
-		Very dense, dark-colored plutonic rock composed and feldspar with abundant biotite and homblende						
25 —		4.0 (0.0 p.m. 1.1.1						
-			-					
_			-					
I			-					
-			-					
Proje	et No.	90532203-H400 Woodward-Clyde	e Consultants	Figure: A-	1 2.8			
riole	UL INU.	COCCLLOCKING TOOGNAM ON A			 <del> "  "  "  "  "  "    "           </del>			

Project:	GREGORY CANYON	Log of N					No. WC	CC-2 (Cont'd)
epth, ft Geologic Log	Material Description		Well Details	Blow Counts	OVM/OVA (ppm)	Type	Sample No.	Notes
	(Continued) very dense,dark-colored plutonic composed of quartz and feldspar with abunda hornblende	rock nt biotite and		60/ 4"		1		
35 —		-		40/ 3"				Hole abandoned at 35'. Sampler dropped into boring. Drill new hole, 10' north, 35' total depth - no samples retained
40	Becomes more dense			130/ 6"			<b>B</b> 2-40f	
45 —		 -		110/ 3"		_	<b>B</b> B2-45f	
50		_						
	Bottom of boring at 50 feet	 - - -						
55 —		 - -						
60—		  						
		-						
Project No: 9	0532203-H400 Woodward-Cly	de Cons	ultants	•			Figure: A	· <b>-2.</b> 9

		055005	O ANIVON					· ** ··	
	oject			Log of Test	Bori	ng N	0:	B-3	
<del></del>	ged by		Checked by:						
-			212, Air Rotary, 6.5" Tricone						
		v and Datum: Appro ATD: Approximately:							
			Date Completed: 10-16-91						
Louis	) Otario		vale completed. 10-10-51				<del></del>		
	ပ္				7 53	OVM/OVA (ppm)	L	Sample	
Depth, ft	Geologic Log		Material Description		Blow Counts	₩ dd	уре	No.	Notes
Ω	පී _				0	Ó	F		
		COLLUVIUM							
-		Dry, reddish brow boulders	vn, silty, fine-grained sand (SM)	with cobbles/					
i -									
•••		Boulder		_					
_		!		_					
5									
				-					
-				•					
_									
-				-					
10—					60/		$\vdash$	] .	Refusal, no
ا _				-	3"		Γ		sample retained
-				_				***************************************	
-				-					
-									
15			BEDROCK (TONALITE)  nposed of quartz, feldspar, hore	blende and					
_		biotite; foliated	ripoddd o'r quarte, rondbar, rion		ļ				
_				-					
_				-					
				_					
				_					
20 —				-		•			
-				-					
_				-					
-				-					
-				-					
25 —									
-				-					
-				-				}	
ا _				-					
				-					
ļ						<u> </u>	_		
Projec	ct No: 9	90532203-H400	Woodward-Clyd	e Consultant	s 🕰			Figure: A-2	2.10

	ojec	: GREGORY CANYON		Lo	g o	E	oring No	.: В-3
h,	ည်			۸ nts	OVA (E	,	Sample	
ept #	Geologic Log	Material Description		Blow Counts	MVO	1	No.	Notes
-		(Continued) plutonic rock composed of quartz, feldspar hornblende and biotite; foliated	_				<u> </u>	Drilling harder at 30'
-		·	1					
-		Becomes wet	_					Encountered water at
35			_					33', baring sloughed 33' to 35'
55		Bottom of Boring at 35 feet						
-		Boring backfilled with 3/8-inch bentonite chips hydrated during placement						
-			-					
-								
40 <i>-</i>								
_			4					
_			_					
_								
45-								
-								
]			1					
-	-		_					
50-			_					
-			_					
] ~			-					
-	•							
55_								
-			-					
-	<u> </u>							
-	1		-	]				
-	†							
60-	1			j				
			_					
-	-		_					
Drai	oct No:	90532203-H400 Woodward-Clyde Co	n	suli	ant	_L s	<u></u>	Figure: A-2.11
Project No: 90532203-H400 Woodward-Clyde Consultants Figure: A-2.11								

Projec	: GREGORY	CANYON						
Logged by		Checked by:	Log of Test	Borii	ng N	0:	B-4	
		「212, Air Rotary, 6.5" Tricone						
Pround El	ev and Datum: Appro	oximately 361', MSL						
WL Depth	ATD: None encounte	ered						
Date Start	ed: 10-16-91 [	Date Completed: 10-16-91						
					₹	5	Sample	
Depth, ft Geologic Log		Material Description		Blow Counts	OVM/OVA (ppm)	<u>o</u>	No.	Notes
De Geo				ြာပ္	8	Туре	INO.	
	COLLUVIUM		· · · · · · · · · · · · · · · · · · ·					
	Very dense, dry, boulders, micace	reddish brown, silty sand (SM) w eous	rith cobbles/ -					
			-					
	Boulders		-					
			_					
5—					1			
			-					
			-					
			<del>-</del>					
			_					
10	With olive-gray	mottling (with metamorphic clasts	<u> </u>	109		П	B4-10.	.5ft
7	•		-					
, ]	<b>→</b> Be∞mes pebbly	y						
	•		-					
15								
15—						$\prod$		
				50		Ш	B4-16	•
	Boulder (decomp	oosed; leucogranodiorite)						
	Boulder (metam	orphic?); dark-colored cuttings	-					
20 —	Bottom of Boring							
	Boring backfilled	with 3/8-inch bentonite chips hyd	drated					
	during placemen	t.	_					
_			-					
			-					
25			_					
			<u>.</u>					
			_					
Project No:	90532203-H400	Woodward-Clyde	Consultant	s 🕰		F	igure: A-2	.12

Dr	oject	· GPECOPY	CANYON		<del></del>				
	<del> </del>	: RKS	Checked by: AUM.	Log of Test	Bori	ng N	0:	B-5	
1			T 212, Air Rotary, 6.5" Tricone	<u> </u>				<del></del>	
ŧ			oximately 378', MSL						
		ATD: None encount	•						
1			Date Completed: 10-18-91						
	ſ			<del></del>	T	1_	Т	0	
يز	ig _		Material Description		ıts ≪	OVM/OVA (ppm)		Sample	\$1a4aa
Depth, ft	Geologic Log		matorial Boodington		Blow Counts	N dd	lg.	No.	Notes
	Θ	TODOO!!				<u> </u>	L		
_		TOPSOIL Loose, dry to ma	pist, dark reddish brown, silty, fine	-grained -	NR		R		60% recovery
-		sand (SM)		<del></del>			N		
_		RESIDUAL So	OIL eddish brown, clayey sand (SC) w	ith gravels					
_		and boulders		g			1		
5		OLDER COLL	.UVIUM st, reddish brown, silty sand with o	clay (SM)			<u>_</u>		85% recovery
_		and gravels	ot, readion blown, only said with	-	NR		R		do % recovery
_		Fine gravels		<u>-</u>			U		
		- -							
				_		İ	2		
10-				•					
		Very dense, mo	ist, reddish brown, silty sand (SM	), slightly	]		R		100% recovery
		cemented		 -	j		U		
1 _							N		
			BEDROCK (TONALITE) utonic rock composed of quartz as	nd foldonor			3		
15			otite and hornblende	ila telaspai 		İ			80% recovery
		Becomes mode	rately weathered	_	NR		R		007010000017
				_			U		
				_			N		
							4		
20 —									100% ranguage
20							R		100% recovery
							U		
		Recomes highly	weathered, fractured and oxidize	od.			N		
		V Describes inginy	Wodisiered, Hacidred and Oxidize	-			5		
				•					
25		Bottom of Boring	at 25 feet						
		Boring backfilled	with 3/8-inch bentonite chips hyd	drated -		,			
7		during placemen							
'	İ			_					
Projec	t No: 9	0532203-H400	Woodward-Clyde	Consultant	s 🕰		F	igure: A-	2.13

WL Depth ATD: 20 feet  Date Started: 10-18-91  Date Completed: 10-19-91  Well Casing: 2" diam., Sch 40 PVC  Screen: Filter Pack: #2/16 Lonestar sand Bentonite	
Ground Elev and Datum: Approximately 328', MSL  WL Depth ATD: 20 feet  Date Started: 10-18-91  Date Completed: 10-19-91  Filter Pack: #2/16 Lonestar sand Bentonite	ver: Monument 0.020" slotted
	.o (Cittiopiog)
Haterial Description  Well Details Room Some Solution  Well Details Room Solution  Well Details Room Solution No.	Notes
Loose, dry, brown, silty sand (SM) with gravel  NR  R U N 1	0% retained
COLLUVIUM  Moist, reddish orange brown, fine- to medium-grained, silty sand (SM) with gravel and boulders  Leucogranodiorite boulder	30% retained
	5% retained
15— 15— NB. RUN 6 50	0% retained 0% retained
Boulder Gravel Boulder N 7 7 75	5% retained
Wet, orange brown, clayey, medium-grained sand (SC) with gravel	0% retained
Bottom of Boring at 30 feet  NR R U N 9	0% retained
Project No: 90532203-H400 Woodward-Clyde Consultants Figure: A-2.14	1

## MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-1

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 342.5 feet ELEVATION TOP OF CASING: 343.72 feet DATE STARTED: 11/19/96 DATE FINISHED: 11/20/96 TOTAL DEPTH: 300 feet

TICONED	BY: T. REEDER				. 10	TAL DEPTH:	300 feet			
0		Total Dep		NG SUMMARY:	WE	LL CONST	FRUCTI			ilsh Tim
			diameter	: 5.5 inches O.D.	Drilling:		11/19/96			-
5 ——		Dilliei. L	uyne cer	o latisati	Coring:		-		-	-
*****				L REVERSE	Ream:		_		_	╁.
******		Bit(s): CA	KRINF ROI	ION RII	Geophys.	. Logging:	12/13/96	-	12/13/96	<del>,</del>
10		Drilling Flu	ıld: Air		Casing Ir	nstall:	11/19/96	10:36		┪
		Protective	Casing:	N/A	Filter Pl	acement:	_	<u>-</u>	_	<u> </u>
· · ·				•	Seal Plac	cement:	-	_		+
15		WELL	CONST	RUCTION DETAILS:	Seal Plac	cement 2nd:	-	_	-	
******		<u> </u>				····				
20 —			Casing:	6—inch diameter, flush threaded, Schedule 40 PVC	WE	LL DEVEL	OPME!	NT L		<b>-</b> 1.
******	<b>经验验</b>			(boring reamed to 8—inch diameter prior to placement				Date	Start Time	Fin
25 ——		-		of casing). (From +1.22 to 20 feet.)	Surge Blo					
	<b>淡湖</b> 淡		0	·		Pumping				
*****			Screen:	NONE - OPEN HOLE. (From 20 to 300 feet.)	Bail					******
30		17777777			lotal Go	allons Remov	ed:			
			Bentonite	Seal: Bentonite pellets. (From 3 to 20 feet.)	STA Galtons	ABILIZATIO	ON TES	T D		/o.c
70	<b>多数数</b> 多	图图图	Cillar D	ack: NONE - FRACTURED ROCK.		P11 01	out.		Temp	
		INSTANTAL	rillei r	der: None - Hactured Rock.						
morro.		**************************************	Daalduut	Catt						
75	<b>经格数</b>		Residual (From 0	to 10 feet.)					·····	
	经经验		DECOUR	OCED DACK				<del></del>	····	
	经的经验			OSED ROCK. O to 20 feet.)			······	<del></del>	<u> </u>	
80	<b>经验验</b>		D. H.	** (f	Comme	nts:				
	<b>浴網絡</b>		(From 0	Type II cement with bentonite. to 3 feet.)						
w	<b>淡锅</b> 紫			•						
85 ——	<b>珍妮</b> 您									
	<b>淡褐溪</b>	WF	LL MA	NITORING DATA:	1			<del></del>	<del> </del>	
90 ——	经路线		Filme ,	Reading	Corr.	, Depth		WL	, Ву	
	经的数		6:30	99,5'	1.5'	234'	<del></del>	5.5'	TSI	
		12/16	_	37.1'	1.5'	296,4'		7.9'		
95	經濟學經			<i>U</i> 1.1	FA)	230.4	29	( . J	Ш	
, 										
	**************************************									

### GeoLogic Associates MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-2

PAGE: 1 OF 1

250 -----

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 377.1 feet ELEVATION TOP OF CASING: 379.45 feet DATE STARTED: 11/18/96 DATE FINISHED: 11/19/96 TOTAL DEPTH: 250 feet

CHECKED	BY: I. REEDER			тот	AL DEPTH:	250 feét	t		
0		DR	ILLING SUMMARY:	WEL	L CONST	FRUCTI			ieh , Tim
<del></del>			neter: 5.5 inches O.D.	Drilling:			<del> </del>	11/19/96	<del></del>
5		Dillion. Edyi	10 0110110110011	Coring:		_	-	_	-
		1	WALL REVERSE	Ream:		-	_	-	<del>  _</del>
		Bit(s): CARBID	E BUTTON BIT	Geophys.	Logging:	12/12/96	_	12/12/96	<del> </del>
10		Drilling Fluid:	Air	Casing Ins	stall:	<del> </del>	<del> </del>	11/18/96	<del> </del>
##		Protective C	asina: N/A	Filter Pla	cement:	_	-	-	-
			,	Seal Plac	ement:			_	<del>  _</del>
15		WELL CO	NSTRUCTION DETAILS:	Seal Plac	ement 2nd:			<del>-</del>	<del>                                     </del>
						<u> </u>	1	<u> </u>	]
20		l Ca	sing: 6—inch diameter, flush	WEL	_L DEVEL	OPME	NT L	 _0G:	
-	<b>经验验</b>		threaded, Schedule 40 PVC						F <u>l</u> nis
			(boring reamed to 8—inch diameter prior to placement	Surge Block			Date	1 Ime	Tim
25			of casing). (From +2.35 to 10 feet.)	Air Lift F					
		Sc Fried	reen: NONE - OPEN HOLE.	Bail			<u>-</u>	-	
			(From 10 to 250 feet.)		llons Remov	e d+	<del> </del>	<u> </u>	
30 ——		57777777							
	<u> </u>	Ber	fonite Seal: Bentonite pellets. (From 3 to 10 feet.)	1	BILIZATIO	ON TES Dec. Cond.	iT D.	ATA:	(°E
220		V=57'=577	·						
		FII	ter Pack: NONE — FRACTURED ROCK.						
225		Res (Fr	sidual Soil. om 0 to 5 feet.)			<u> </u>			
	<b>经验验</b>		on a to a rootly						
Parties as		Por (Fr	tland Type II cement with bentonite.					<u> </u>	
230		tantiani (Fr	om 0 to 3 feet.)	Commen	ts:				********
235									
		WELL	MONITORING DATA:			. <u>.</u> .			
240		Date Time		Corr.	, Depth	. \$	SWL	, By	
		11/19 6:40	127.5'	1,5'	126'		7.5'	TSF	~
Anna an	<b>经验验</b>	11/19 15:05		1.5'	103.5'	<del> </del>	70'	TSF	
245		11/20 10:03		1.5'	72.3'		)1.2'	TST	
		12/16 -	69.73'	1.5'	68.23'				
	<b>经路线</b>		V0(/V	LiU	00.23	303	5.27'	<u> </u>	
	コンハコンドウエハフマハフ	3 I			I	1		1	

### GeoLogic Associates MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-3

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 330.6 feet ELEVATION TOP OF CASING: 332.02 feet DATE STARTED: 11/25/96 DATE FINISHED: 11/26/96 TOTAL DEPTH: 150 feet

١.									· · · · · · · · · · · · · · · · · · ·
0		DRILLING	SUMMARY:	WELL	CONST	RUCTI	ON L	_OG:	:
		Total Depth: 150 fe Borehole diameter: 5	et			Date Sta	rt Time	Fin Date	ish Time
BA-A-		Driller: Layne Crister		Drilling:		11/25/96	12:15	11/26/96	7:31
5		·		Coring:	-	-	_	-	-
		Rig: DUAL WALL Bit(s): CARBIDE BUTTON		Ream:		_			_
and the same of th		Diritar. Grande Botton	· un	Geophys, Logo	ging:	12/14/96	-	12/14/96	-
10		Drilling Fluid: Air		Casing Install:		11/25/96	12:45	11/25/96	15:33
		Protective Casing: N	I/A	Filter Placeme		_	_	-	-
15				Seal Placemen	ıt:	-	-	-	-
		WELL CONSTR	UCTION DETAILS:	Seal Placemen	nt 2nd:		-	-	-
<u></u>									1
20		Casing: 6	-inch diameter, flush	WELL	DEVEL	OPME	NT L	OG:	
			nreaded, Schedule 40 PVC poring reamed to 8—inch			ſ	Date	Start Time	Finish Time
		ď	iameter prior to lacement of casing),	Surge Block					
25		(F	From +1.42 to 45 feet.)	Air Lift Pump	oing				
		FFFFF Screen N	ONE - OPEN HOLE.	Bail					
30			From 45 to 150 feet.)	Total Gallons	Remove	ed:			
		<i>*******</i> *****************************		STABIL	IZATIO	N TES	T D	ΔΤΔ:	
		Bentonite Sec	ıl: Bentonite pellets. (From 3 to 45 feet.)	Gallone pH		ec. Cond.		Temp	(°F)
35									
		Filter Pack	«: NONE - FRACTURED ROCK.					·	
40		ALLUVIUM/C (From 0 to	OLLUVIUM. 30. feet )						
FF-6-73		O C RIOLT)	JU 1661.)	•		THE STATE FALL	***************************************		
45		DECOMPOSE (From 30 to		Comments:					
45	<b>淡源淡</b>	(FIOR 30 (	o to leed.)	Comments:					
		Portland Typ (From 0 to	pe II cement with bentonite.						
50		(FIOID U to	J (66(°)						
	<b>经验验</b>								
	<b>深刻的</b>	WELL MONI	TORING DATA:			,			
140	**************************************	Date Time	Reading	Corr.	Depth		WL	Ву	
	<b>经银线</b>	11/26 6:45	21'	1.5'	19.5'	3	09'	TSI	R ]
******		12/16 -	23.84'	1.5'	22.34'	300	6.16'	U	.
145	<b>淡湖</b> 绿								
	经的数据								
FRATA	<b>经验的</b>								
150	经经验经验								

## MONITORING WELL COMPLETION SUMMARY

WELL NO .: GLA-4

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER/M. VINCENT
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 904.9 feet ELEVATION TOP OF CASING: 904.99 feet DATE STARTED: 11/26/96 DATE FINISHED: 11/27/96 TOTAL DEPTH: 240 feet

		_	DRIL	_ING	SUMMARY:	W	ELL CONS	TRUCT	ION	LOG:	
_	·33   88	Total D	epth: 2	0 fee	t			Date St.	art   Time	Date Fin	ileh Tim
  			e diame:		5 inches O.D. sen	Drilling	:	11/26/96	_	11/27/96	3 11:0
			•			Coring	:	_	_	-	1-
		Rig:			EVERSE	Ream:		-	-		<del>  -</del>
		Bif(s):	CARBIDE I	BUTTON	BIT	Geoph	ys. Logging:	12/17/96	_	12/17/96	<del>  _</del>
(		Drilling	Fluid: A	ir			Install:	11/26/96	<del> </del>	11/26/96	· <del> </del>
<u> </u>		Protect	ive Casi	ar Ma	/ A	ļ	Placement:	_		-	<u> </u>
		110100	ire edai	19. 147	*		lacement:	<u>-</u>	<u> </u>		<del> -</del>
		WEL	L CON	STRU	CTION DETAILS:	Seal P	lacement 2nd:		ļ <u> </u>	ļ <u>-</u>	<del>                                     </del>
1/2											<u></u>
Ĭ.		ļ 	<del>-</del>			14	/CII DEVE	LODIE			
į			Casin	g: 6– thr	inch diameter, flush eaded, Schedule 40 PVC	, w	ELL DEVE	LOPME	NI I		
				(bo	oring reamed to 8—inch imeter prior to placement				Date	Start I Time	Finia Tim
- 5				of	casing).	Surge E					
1/2				(Fr	om +0.09 to 30 feet.)	Air Li	ft Pumping				
			Scree	n: NO	NE - OPEN HOLE.	Bail					
576		ारस्य			om 30 to 240 feet.)	Total	Gallons Remov	/ed:			*******
立		577777	77			S	TABILIZATI	ON TES	T D	Λ T Λ ·	
<u></u>	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Benton	te Seal:	Bentonite pellets, (From 3 to 30 feet.)	Gallons		Spec. Cond.	,, ,	Temp	(°F)
1					•						
		经经	∬ Filter	Pack:	NONE - FRACTURED ROCK.			***************************************			
1										ļ	
<u> </u>			Residu			-					
巡		CHILLE.	△ (From	U to 1	(O feet.)						
1		F24092403	23 Portla	d Type	Il cement with bentonite.	ļ			··	1	
1000 1000 1000 1000 1000 1000 1000 100		NAME OF	From	0 to 3	feet.)	Comm	ents:				
27											
<u> </u>											
<u>:</u>											
						<u></u>					
沙				ONIT	ORING DATA:						
該		Date	Time		Reading	Corr.	Depth		₩L	Ву	
彦	鐵網線	12/02	6:55		103.2'	1.5'	101.7'	80	1.8'	TSF	}
		12/16			149.93'					,	

#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-5

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 927.1 feet ELEVATION TOP OF CASING: 927.92 feet DATE STARTED: 11/20/96 DATE FINISHED: 11/21/96 TOTAL DEPTH: 190 feet

			DRILL	ING SUMMARY:	WE	LL CONST	TRUCTI	ON L	OG:	
		Total De	onth: 19	0 feet			Sto Date	rt Time	Fin Date	lsh Time
逖		Borehole	diamet	er: 5.5 Inches O.D.	Drilling:		11/20/96			
		Driller:	Layne u	ristensen	Coring:			-	11/21/00	9:4/
\$//		Rig:	DUAL W	ALL REVERSE	Ream:					-
<i>\$///</i>				LUTTON BIT		·!	- 12 /10 /05	-	- 40 400	-
		Drilling I	Tuda. ∆	1_		Logging:	12/16/96		12/16/96	<del> </del>
<i>\(\)</i>					Casing In		11/20/96		11/20/96	<del> </del>
		Protect	ve Casir	g: N/A	Filter Pla		-	-	-	-
<b>%/</b> //		11/51	2011					-	-	-
		WELI	CON:	STRUCTION DETAILS:	Sedi Pioc	cement 2nd:	_	-	_	
						····				
			Casin		WE	LL DEVEL	OPME	NT L	OG:	
			)	threaded, Schedule 40 PVC (boring reamed to 8—inch			ſ	Date	Start Time	Finish Time
				diameter prior to placement	Surge Bloc	ck				
				of casing). (From +0.82 to 30 feet.)		Pumping		V4	-	
					Bail					
			Scree	n: NONE - OPEN HOLE. (From 30 to 190 feet.)	Total Go	allons Remov	ed:		LL	
	团修经			(110111 00 to 100 1000)						
级	網經		Benton	te Seal: Bentonite pellets.	STA	ABILIZATIO	ON TES pec. Cond.	T D	ATA: Temp	(0E)
	開終	14444	LA.	(From 3 to 30 feet.)		PIN .	P00. Cu		10101	Uli
診	學終	KINE THE REAL PROPERTY.	ন Filter	Pack: NONE - FRACTURED ROCK.	-					
		Wizzizz	n	110110	-					-
<b>1000</b>	的形态	RZZZZZZ	23 AOG 11	mini /pasidosal Osti						
該	· 系统统		(From	VIUM/Residual Soil. O to 15 feet.)						
颜			25201	PARTE MARIE					<u> </u>	
逐逐				POSED ROCK. 15 to 25 feet.)	Comme	nts:	<del></del>			
	<b>对</b> 级				***					
			Portlar	nd Type II cement with bentonite.  0 to 3 feet.)						
多			~ (110111	0 (0 5 1660.)						
彩										
ル シ シ	<b>多的</b> 数	w	ELL N	ONITORING DATA:			<del></del>			
级		Date	Time	Reading	Corr.	Depth	1 5	SWL.	Ву	
<b>影</b>		11/21	6:30	41'	1.5'	39.5'	8	89'	TS	R
· //	多路影	12/16	_	42.57'	1.5'	41.07'	88	7.43'	ш	
\$ 15 h										
经经	经结									
とん	<b>《乾秋</b> 》						ì			

#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-7

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 401.6 feet ELEVATION TOP OF CASING: 402.85 feet DATE STARTED: 11/21/96 DATE FINISHED: 11/22/96 TOTAL DEPTH: 160 feet

			DRII I	ING SUMMARY:	WE	LL CONST	'RUCTI	ON 1	ng.					
0					""	LL CONO				ish				
= 2000		Total Dep   Borehole		O feet er: 5.5 inches O.D.			Date Sta			Time				
		Driller: 1			Drilling:		11/21/96	13:55	11/22/96	10:21				
5		0:		DEVEDOE	Coring:	<del> </del>	_	-		_				
*****		Rig: DI Bit(s): CA		ALL REVERSE UTTON BIT	Ream:		-	-	-					
					Geophys	. Logging:	12/19/96	-	12/19/96					
10		Drilling Fl	uid: Ai	r	Casing I	nstall:	11/21/96		11/21/96	-				
		Protectiv	e Casin	g: N/A	4	lacement:	-	_	_					
15			<del></del>	······································		cement:	_	-		-				
		WELL	CONS	STRUCTION DETAILS:	Seal Pla	cement 2nd:	-	-	-	-				
20			Casing		WELL DEVELOPMENT LOG:									
				threaded, Schedule 40 PVC (boring reamed to 8—inch			ı	Date	Start Time	Finish Time				
				diameter prior to placement of casing).	Surge Blo	ock								
25				(From +1.25 to 30 feet.)	Air Lift	Pumping								
					Bail									
30			Scree	n: NONE — OPEN HOLE. (From 30 to 160 feet.)	Total G	alions Remov	ed:	<del></del>	i					
_		<b>F-3-3-3-3-3-3-3</b>			ST	ABILIZATIO	ON TES	T D	ATA:					
			Bentoni	te Seal: Bentonite pellets. (From 3 to 30 feet.)	Gallone		pec. Cond.		Temp	(°F)				
35 ——				(From 5 to 55 tostly										
	<b>多数的数</b>	逐逐	Filter	Pack: NONE - FRACTURED ROCK.										
****	27/21/17/27Y													
135			COLLU											
	<b>多数数数</b>		, (Ltom	0 to 10 feet.)										
	<b>淡湖淡</b>	33202	1	POSED ROCK.	Carre				<b></b>					
140	<b>淡湖</b> 溪	<u> </u>	trom (From	10 to 30 feet.)	Comme	:IIIS:								
			Portlan	nd Type II cement with bentonite.  O to 3 feet.)										
145	<b>多網際</b>	WHITE THE P	(From	0 to 3 feet.)										
	<b>不是的现在</b>									-				
		WE	ELL M	ONITORING DATA:					•					
150	<b>经路线</b>	Date	Time	Reading	Corr.	Depth	:	SWL	, Ву	1				
	经验的	12/16		34.82'	1.5'	33.32			TS	iR				
155				,										
M 444	<b>经超级</b>													
	<b>浴馆</b> 纷													
160	<b>泛海</b> 经验													

#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-8

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: M. VINCENT/T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 632.7 feet ELEVATION TOP OF CASING: 633.11 feet DATE STARTED: 11/24/96 DATE FINISHED: 11/25/96 TOTAL DEPTH: 300 feet

			DRILL	ING SUMMARY:	W	ELL CONST	RUCTI	ON L	_OG:	
		Total Do	nih. 300	) fact			Sta Date	rt Time	Fin Date	lsh Tlm
			epth: 300 e diamete	r: 5.5 inches O.D.	D -110;		<del></del>			<del> </del>
		Driller:	Layne C	ristensen	Drilling:	***************************************	11/24/96	9:20	11/25/96	11:1
			D1441 W	N. DEWEDAN	Coring:	·		-	-	-
		, ·	CARBIDE BI	ALL REVERSE UTTON BIT	Ream:		-	-	-	-
					Geophy	s. Logging:	12/18/96	_	12/18/96	-
		Drilling F	Fluid: Ai	r	Casing	install:	11/24/96	~	11/24/96	_
		Protecti	ve Casin	g: N/A	Filter F	Placement:	-	-	_	_
					Seal Pl	acement:		_		-
	路級	WELI	CONS	TRUCTION DETAILS:	Seal Pl	acement 2nd:			-	<del> </del>
Į	级路级						<u> </u>	<u> </u>	1	1
[2] = \}	多数数数		7 (**:	u. Gulnah diamakan disah	w	ELL DEVEL	OPME	NT I	OG:	
1	<b>淡的</b> 级		] casing	: 6-inch diameter, flush threaded, Schedule 40 PVC	"					Finle
(Z)	<b>多路</b> 黎			(boring reamed to 8—inch diameter prior to placement				Date	Start Time	Finla Tim
影				of casing).	Surge B					
\$	<b>经的</b> 经			(From +1.41 to 15 feet.)		† Pumping				
			Scree	n: NONE - OPEN HOLE.	Bail					
<b>※</b>		tombled of the		(From 15 to 300 feet.)	Total	Gallons Remov	ed:			
		777777	Z 0	te Seal: Bentonite pellets.	ST	ABILIZATIO	ON TES	T D	ATA:	
<u>-3</u>		:   <i>\!!!!!</i>	7 perilonii	(From 3 to 15 feet.)	Gallons	pH S	pec. Cond.		Temp	(°F)
		V=\17=\17	~ <del>-</del>							
刻		逐逐	∯ Filter	Pack: NONE - FRACTURED ROCK.						
25/2 25/2										
12		3.94-54 94.45 1		POSED ROCK, 0 to 15 feet.)						
	<b>《路路》</b>		4.1010	5 to 10 100ty			····-			
		<b>3232</b>	Portlan	d Type II cement with bentonite.  0 to 3 feet.)	<u> </u>				<u> </u>	
1/2		GENERAL STA	≟) (From	U to 3 feet.)	Comm	ents:				
· · · · · · · · · · · · · · · · · · ·	器開發									
15.	<b>密照</b> 图									
19	经超级									
<u> </u>	经的线				<u> </u>		-			
	<b>※新聞祭</b>	W	ELL M	ONITORING DATA:						
		Date	Time	Reading	Corr.	Depth		SWL	Ву	
- <u> </u>		11/25	6:45	61'	1.5'	59.5'		559'	TS	iR
_		12/16	-	62.40'	1.5'	60.9	5	57.6'	Ц	
经	经的数						1			
	、 <i>ンド</i> くイレニ。アリンドく/ド	1	l i	i			1			

### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-9

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: M. VINCENT/T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 615.4 feet ELEVATION TOP OF CASING: 615.61 feet DATE STARTED: 12/05/96 DATE FINISHED: 12/07/96 TOTAL DEPTH: 300 feet

	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		DRILLI	NG SUMMARY:	WEL	L CONST	FRUCTI	ON L	_OG:	
		Total De	epth: 300	feet			Sta Date	rt Hime	Fini Date	ish , Tlm∈
			e diamete Layne Cr	r: 5.5 inches O.D.	Drilling:		12/05/96	_	12/07/96	8:5
		Driner.	Luyne or	10 (6110611	Coring:			_	-	_
		, •		LL REVERSE	Ream:					
		Bit(s):	CARBIDE BU	TTON BIT	Geophys. L	ogging:	N/A		N/A	<del>  _</del>
		Drilling I	Fluid: Air	•	Casing Inst		- 17/		- 13/ ^	-
*****		D	0 1		Filter Plac					-
		Protect	ive Casing	j: N/A	Seal Place					-
		WFI	CONS	TRUCTION DETAILS:	Seal Place				-	-
		11 6-6-1	_ 00110	TROOTION DETAILS.			-	_		
					11.50					
	<b>多级的数</b>		Casing:	6-inch diameter, flush threaded, Schedule 40 PVC	WEL	L DEVEL	OPME	NT L		
		-		(boring reamed to 8—inch				Date	Start Time	Finia
				diameter prior to placement of casing).	Surge Block					-
				(From +0.21 to 20 feet.)	Air Lift P	umping				***************************************
			] Screen	NONE - OPEN HOLE.	Bail					
				(From 20 to 300 feet.)	Total Gall	ons Remov	ed:	******	ł	
		******	~		STAF	BILIZATIO	ON TES	T D	Λ T Λ ·	
	34315436	.   \////	Bentonit	e Seal: Bentonite pellets. (From 3 to 20 feet.)			pec. Cond.	,, ,	, Temp	(°F
				(10111 0 10 20 10011)						
	<b>泛網</b> 統		Filter i	Pack: NONE - FRACTURED ROCK.						
_		-								
				OSED ROCK.						
		F****	∰ (From (	0 to 20 feet.)						
		10300000	☑ Portland	Type II cement with bentonite.					<b></b>	
	<b>经路线</b>			0 to 3 feet.)	Comment	s:				
	经验的经验									
	多多的多									
	<b>多类图</b> 类									
2024195	<b>多类的态</b>									
1370-1	经验的	W	ELL MO	ONITORING DATA:						
	- 終點整整	Date	Time	Reading	Corr.	Depth	, :	SWL	Ву	
	<b>影響影</b>	12/07	8:57	DRY	1.5'	N/A	1	√A	TS	R
	<b>※約的</b> ※	12/16		DRY	1.5'	N/A	1	1/A	Ш	
	- 35/34亿分/3	<del>-</del>				<del></del>		•		

#### MONITORING WELL COMPLETION SUMMARY

WELL NO .: GLA-10

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: PROPOSED SAN DIEGO COUNTY LANDFILL
LOCATION: GREGORY CANYON, PALA AREA
INSPECTOR: M. VINCENT/T. REEDER
CHECKED BY: T. REEDER

ELEVATION GROUND LEVEL: 324.6 feet ELEVATION TOP OF CASING: 326.59 feet DATE STARTED: 12/03/96 DATE FINISHED: 12/05/96 TOTAL DEPTH: 150 feet

HECKED B	IT: I. KEEDER			TOTAL L	EPIH:	150 feet			
		DRIL	LING SUMMARY:	WELL	CONST	RUCTI	ON L	_OG:	
0	1216 (82)	Total Depth: 15	50 feet			Sto Date	irt Time	Fini Date	ish Time
_		Borehole diame	ter: 5.5 inches O.D.	Drilling:				12/05/96	
		Driller: Layne	Cristensen	Coring:			-	-	-
		Rig: DUAL W	ALL REVERSE	Ream:		_			<del>  _</del>
		Bit(s): CARBIDE	BUTTON BIT	Geophys. Logo	nina:	12/15/96		12/15/96	
10 —		Drilling Fluid: A	Δir	Casing Install:		12/13/96		12/13/96	
				<del> </del>		12/03/30	<u> </u>	12/03/90	<u> </u>
***		Protective Casi	ng: N/A	Filter Placeme				<del>-</del>	
15		WELL CON	STRUCTION DETAILS:	Seal Placemen		-	-	-	<u> </u>
		WELL CON	STRUCTION DETAILS:	- Court idealine		-		<u> </u>	
			an 6 lank diamakan Mush	WELL	DEVEL	OPME	NT L	OG:	
20		Casir	ig: 6-inch diameter, flush threaded, Schedule 40 PVC (boring reamed to 8-inch				Dote		Finis Time
			diameter prior to	Surge Block		·		<u> </u>	
25 ——			placement of casing). (From +1.99 to 50 feet.)	Air Lift Pum	ping				
			MOUT OPEN HOUT	Bail					
neral ner		Scre	en: NONE - OPEN HOLE. (From 50 to 150 feet.)	Total Gallons	Remov	 ed:		Lj.	
30				OTABL	17 A T1/	NI TE			
		Bento	nite Seal: Bentonite pellets. (From 3 to 50 feet.)	STABIL Gallons, pH		JN 15.2 pec. Cond.	i D	AIA:	(°F)
35			(From 5 to 50 leet.)						~~~
		Filte	r Pack: NONE - FRACTURED ROCK.						
						····		1	
40			JYIUM.					<del> </del>	
		ESZZSZZSZ (From	n 0 to 33 feet.)					<del> </del>	**********
		্রেক্টের্ডর DECO	MPOSED ROCK.	<u></u>				<u> </u>	
45		(Fron	n 33 to 50 feet.)	Comments:					
Factorians		Exercise Portle	and Type II cement with bentonite.						
*****		Fron	n 0 to 3 feet.)						
50	North Control								
		14/51 1	MANUTADINA DATA						
	7275714117527 -7275714117527		MONITORING DATA:	Corr	Danik		s₩L	p	,
40	<b>多網級</b>	l ———	Reading 17'	2'	Depth 15'			By	
******	多数的数数	12/03 -					308'	<u> </u>	
		12/16 -	22.2'	2'	20,2'	34	00.8'		Τ
45	经数数数				<del></del>				
******	多数的数								

#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-11

PAGE: 1 OF 1

JOB NO.: 9539

PROJECT: DETECTION MONITORING PROGRAM

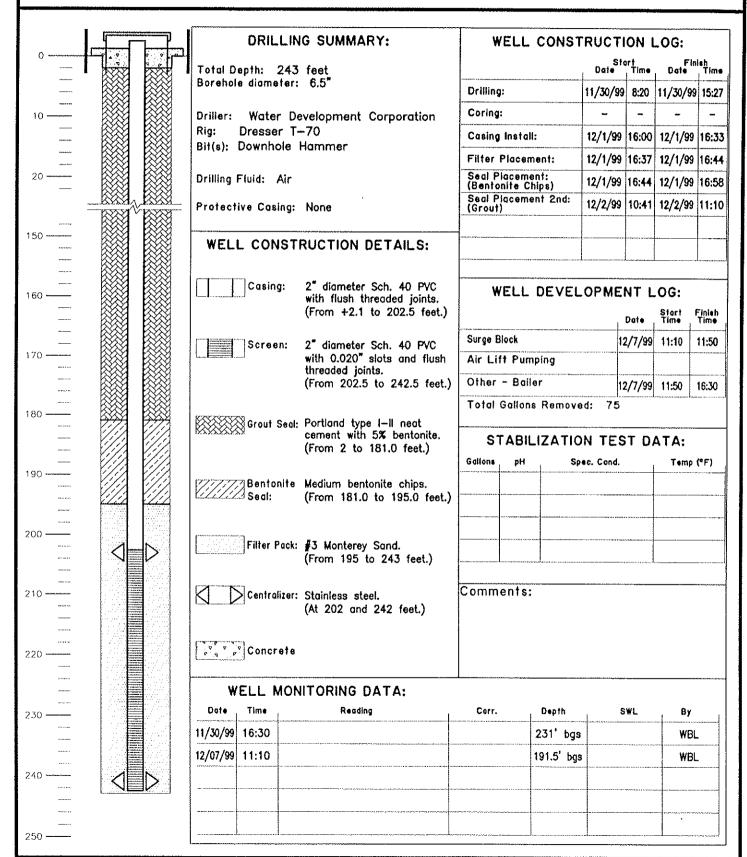
LOCATION: GREGORY CANYON LANDFILL INSPECTOR: W. LOPEZ, CEG

CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 775.22 ELEVATION TOP OF CASING: 777.32

**DATE STARTED: 11/30/99** 

DATE FINISHED: 12/02/99 TOTAL DEPTH: 242.5 feet



#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-12

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: DETECTION MONITORING PROGRAM LOCATION: GREGORY CANYON LANDFILL INSPECTOR: W. LOPEZ, CEG CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 343.91 ELEVATION TOP OF CASING: 345.79 DATE STARTED: 11/24/99 DATE FINISHED: 11/24/99 TOTAL DEPTH: 52 feet

		DRILLING SUMMARY:	WELL CONST	BUCTION		OG:	
0		BRILLING SOMMARY.	WELL CONST			.00. Fin	ista
		Total Depth: 66 feet Borehole diameter: 6-5/8*		Date Stor	†ime	Đạte "	Time
			Drilling:		-		
5		Driller: Water Development Corporation	Coring:	-		-	-
		Rig: Dresser T-70 Bit(s): Tri-cone/Downhole Hammer	***	11/24/99			- <del> </del>
		,		11/24/99			I B
10		Drilling Fluid: Air	Seal Placement: (Bentonite Chips)	11/24/99	14:58 15:15	11/24/99	15:03 15:16
		Protective Casing: 9-7/8" ø steel.	Seal Placement 2nd: (Grout)	11/24/99	15:35	11/24/99	15:40
			-				
20		WELL CONSTRUCTION DETAILS:					
		Casing: 2" diameter Sch. 40 PVC with flush threaded joints.	WELL DEVEL	OPMEN	IT L	OG:	
25 <del></del> 		(From +1.88 to 32 feet.)			ote .	Start Time	Finish Time
		0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	Surge Block		/7/99		8:05
30		Screen: 2" diameter Sch. 40 PVC with 0.020" slots and flush	Air Lift Pumping	12	, -, -,		
		threaded joints. (From 32 to 52 feet.)	Other - Bailer	12	/7/99	8:05	10:30
			Total Gallons Remove		,,,,,,	0.00	
35		Grout Seal: Portland type I—II neat cement with 5% bentonite.					
		(From 2 to 23 feet.)	STABILIZATIO	N TES	T D	ATA:	
			Gallone pH Sp	ec. Cond.		Temp	(°F)
40		Bentonite Medium bentonite chips. Seal: (From 23 to 29 feet and					
		from 53 to 66 feet.)					
45		Filter Pack: #3 Monterey Sand.	ç.			<del></del>	
		(From 29 to 53 feet.)					
50.		Centralizer: Stainless steel.	Comments:				
50		(At 32 and 52 feet.)					
	77.777.777						
55		Concrete					
				·····		<u></u>	
******		WELL MONITORING DATA:					
60		Date Time Reading	Corr. Depth	S	WL	Ву	
1		11/24/99 13:00	36.7' bgs	3		₩B	L
		12/07/99 7:20	35.1' bgs	3		WB	L
65							
7074	VILLISTE						
70							
1							

#### MONITORING WELL COMPLETION SUMMARY

WELL NO.: GLA-13

PAGE: 1 OF 1

JOB NO.: 9539

PROJECT: DETECTION MONITORING PROGRAM LOCATION: GREGORY CANYON LANDFILL INSPECTOR: W. LOPEZ, CEG

CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 355.90 ELEVATION TOP OF CASING: 358.15

DATE STARTED: 11/22/99 DATE FINISHED: 11/23/99 TOTAL DEPTH: 69.5 feet

DRILLING SUMMARY: **WELL CONSTRUCTION LOG:** Finish Date Time Total Depth: 70 feet Borehole diometer: 6.5\* **Drilling:** 11/22/99 15:00 11/23/99 8:22 Coring: Driller: Water Development Corporation Dresser T-70 Casing Install: 11/23/99 10:26 11/23/99 10:35 Bit(s): Tri-cone Filter Placement: 11/23/99 10:35 11/23/99 10:39 Seal Placement: (Bentonite Chips) Drilling Fluid: Air 11/23/99 10:40 11/23/99 10:42 Seal Placement 2nd: (Grout) 11/23/99 10:57 11/23/99 11:13 Protective Casing: 9-7/8" ø steel. **WELL CONSTRUCTION DETAILS:** Casing: 2" diameter Sch. 40 PVC WELL DEVELOPMENT LOG: with flush threaded joints. (From +2.25 to 49.5 feet.) Finish Time Date Surge Block 12/6/99 14:00 14:45 Screen: 2" diameter Sch. 40 PVC with 0.020" slots and flush Air Lift Pumping threaded joints. Other - Bailer (From 49.5 to 69.5 feet.) 16:30 12/6/99 14:45 Total Gallons Removed: Grout Seal: Portland type I-II neat cement with 5% bentonite. STABILIZATION TEST DATA: (From 2 to 38 feet.) Goilons Spec. Cond. Temp (°F) Bentonite Medium bentonite chips. Seal: (From 38 to 44 feet.) (From 38 to 44 feet.) Filter Pack: #3 Monterey Sand. (From 44 to 70 feet.) Comments: Centralizer: Stainless steel. (At 49 and 69 feet.) Concrete **WELL MONITORING DATA:** Reading Date Time Corr. Depth SWL Ву 11/23/99 7:00 49.7' bgs WBL 12/06/99 14:18 47.0' bgs WBL.

#### MONITORING WELL COMPLETION SUMMARY

WELL NO .: GLA-14

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: DETECTION MONITORING PROGRAM
LOCATION: GREGORY CANYON LANDFILL
INSPECTOR: W. LOPEZ, CEG
CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 332.21 ELEVATION TOP OF CASING: 334.13

DATE STARTED: 11/21/99 DATE FINISHED: 11/22/99 TOTAL DEPTH: 55.5 feet

	DRILLING SUMMARY:	WELL CONS	TRUCTION I	LOG:
0	Total Depth: 63 feet		Start Date Time	
	Borehole diameter: 9-7/8"	Drilling:	11/21/99 7:35	11/21/99 16:1
-	Driller: Water Development Corporation	Coring:		
5	Rig: Dresser T-70	Casing Install:	11/22/99 8:23	11/22/99 8:2
	Blt(s): Tri-cone	Filter Placement:	11/22/99 8:30	11/22/99 8:3
10 —	Drilling Fluid: Air	Seal Placement: (Bentonite Chips)	11/22/99 7:52 8:38	11/22/99 7:5
	Protective Casing: 9-7/8" ø steel.	Seal Placement 2nd: (Grout)	11/22/99 9:05	1
20	WELL CONSTRUCTION DETAILS:			
	Casing: 2" diameter Sch. 40 PVC			
25	with flush threaded joints.	WELL DEVE	LOPMENT L	
<del></del>	(From +1.92 to 35.5 feet.)		Dafe	Stort Finish Time Time
	Screen: 2" diameter Sch. 40 PVC	Surge Block	12/6/99	9:35 10:20
30 ——	with 0.020" slots and flush threaded joints.	Air Lift Pumping Other ~ Bailer	10.10.10	
	(From 35.5 to 55.5 feet.)	Total Gallons Remov	l-i-i	9 10:20 12:3
35 ——	Grout Seal: Portland type I-II neat	TOTAL GUILONS RELIEV	760. 70	
	cement with 5% bentonite. (From 2 to 25.5 feet.)	STABILIZATI	ON TEST D	ATA:
_		Gallons pH S	Spec. Cond.	Temp (*F)
40	Bentonite Medium bentonite chips. Seal: (From 25.5 to 30 feet and			
	from 56 to 63 feet.)			
45 —	Filter Pack: #3 Monterey Sand.			
	(From 30 to 56 feet.)			1
	Centralizer: Stainless steel.	Comments:		
50	(At 35 and 55 feet.)			
*****				
55	Concrete			
	WELL MONITORING DATA			
	WELL MONITORING DATA:  Date Time Reading	Corr. Depth	. SWL	, Ву
60 —	11/22/99 7:00	36.5' b		WBL
	12/06/99 9:20	36.5' b		WBL
65			•	A
				· · · · · · · · · · · · · · · · · · ·
	**************************************			

#### MONITORING WELL COMPLETION SUMMARY

WELL NO .: GLA-15

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: DETECTION MONITORING PROGRAM
LOCATION: GREGORY CANYON LANDFILL
INSPECTOR: W. LOPEZ, CEG
CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 304.82 ELEVATION TOP OF CASING: 306.80 DATE STARTED: 11/19/99 DATE FINISHED: 11/20/99 TOTAL DEPTH: 45 feet

		- I								~~.	
				DRILLIN	G SUMMARY:	WE	ELL CONST	FRUCT	ION I	LOG:	
0			Total De	epth: 50 f	feet			Date St	ort Time	Date Fin	ish Time
			Borehole	diameter:	9-//8"	Drilling:		11/19/9	13:10	11/19/99	17:10
5		$\aleph$			velopment Corporation	Coring:			-	-	-
			-	Dresser T- Tri-cone	-70	Casing i	nstall:	11/20/99	8:30	11/20/99	8:37
		8	Dir(s):	iiicone		Filter P	locement:	11/20/99	8:40	11/20/99	13:00
10		<b>%</b>	Drilling F	Fluid: Air		Seal Pla (Benton	cement: Ite Chips)	11/20/99	13:08	11/20/99	13:12
			Protecti	ve Casing:	9-7/8" ø steel.	Seal Pla (Grout)	icement 2nd:	11/20/99	14:45	11/20/99	15:20
15			WELL	CONST	RUCTION DETAILS:	-					
			[ <b>11</b>	3							
20		2		Casing:	2" diameter Sch. 40 PVC with flush threaded joints.	WE	ELL DEVEL	OPME	NT L	.0G:	
					(From +1.98 to 25 feet.)	· · · · · · · · · · · · · · · · · · ·		ı	Date	Start Time	Finish Time
				Screen:	2" diameter Sch. 40 PVC with 0.020" slots and flush	Surge Blo	ock				
25					threaded joints.	Air Lift	Pumping				
	A STANDARD S				(From 25 to 45 feet.)	Other -					
30	A SAMAGAN A SAMA			Grout Seal:	Portland type I-II neat cement with 5% bentonite.	Total G	allons Remove	ed:			
					(From 2 to 15.5 feet.)	ST	ABILIZATIO	N TES	ST D	ATA:	
35 —				Bentonite Seal:	Medium bentonite chips. (From 15.5 to 20 feet.)	Gallon*	pH Sp	ec. Cond.		Temp	(°F)
*****											
40				Filter Pack:	#3 Monterey Sand. (From 20 to 45 feet.)						
				٦							
				Centralizer:	Stainless steel. (At 25 and 45 feet.)						
45 —				_	,	Comme	nts:				
			V V V	Concrete		***************************************					
			<u> </u>	₹							
50 ——	<u> </u>	<del>.</del>		Slough							
***************************************			W	ELL MON	ITORING DATA:						
55			Date	Time	Reading	Corr.	Depth		SWL	Ву	
			11/20/99	7:00			25.0' bg:			WBI	-
Participal Association			11/21/99	8:30	***************************************		11.7' bgs			WBL	-
60			12/08/99	8:50			12.3' bgs	3		WBL	
					-						

## MONITORING WELL COMPLETION SUMMARY

WELL NO .: GLA-16

PAGE: 1 OF 1

JOB NO.: 9539
PROJECT: DETECTION MONITORING PROGRAM
LOCATION: GREGORY CANYON LANDFILL
INSPECTOR: W. LOPEZ, CEG
CHECKED BY: S. BATTELLE, CHG

ELEVATION GROUND LEVEL: 305.28 ELEVATION TOP OF CASING: 307.54 DATE STARTED: 12/20/99 DATE FINISHED: 12/20/99 TOTAL DEPTH: 29.5 feet

		DRILLIN	G SUMMARY:	WELL C	ONSTRU	CTION	_0G:	
0		Total Depth: 33.5	feet		, Do	Start ste Time	Fin Date	ish Time
		Borehole diameter:	8 <b>"</b>	Drilling:	12/2	0/99 10:00	12/20/99	10:15
5		Driller: Water Dev	velopment Corporation	Coring:			_	-
2		Rig: CME-95	·	Casing Install:	12/2	0/99 10:15	12/20/99	10:30
		Bit(s): Hollow Sten	n Auger	Filter Placemen	nt: 12/2	0/99 10:30	12/20/99	10:55
10		Drilling Fluid: Air		Seal Placement (Bentonite Chip	12/2	0/99 10:55	12/20/99	11:05
		Protective Casing:	Hollow Stem Auger	Seal Placement (Grout)	2nd: 12/2	0/99 11:15	12/20/99	11:30
15		WELL CONST	RUCTION DETAILS:					
20 —		Casing:	2" diameter Sch. 40 PVC with flush threaded joints. (From +2.26 to 9.5 feet.)	WELL C	EVELOP	MENT L		Finish Time
work.			08 11 July 01 40 DHO	Surge Block		12/23/99		12:10
25 ——		Screen:	2" diameter Sch. 40 PVC with 0.020" slots and flush	Air Lift Pumpi	ng	-77		
			threaded joints. (From 9.5 to 29.5 feet.)	Other - Bailer		12/23/99	12:10	14:00
30		Grout Seal	Readi-mix concrete.	Total Gallons	Removed:		11.	
		KXXXXXX	(From 0 to 3 feet.)	STABILI	ZATION '	TEST D	ATA:	
				Gallone pH	Spec. C	Cond.	T⊕mp	(°F)
35 ———		Bentonite Seal:	Medium bentonite chips. (From 3 to 7.8 feet.)					
<del></del>					·			
40 —		Filter Pack	#3 Monterey Sand.					
******			(From 7.8 to 33.5 feet.)				<u></u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
  45				Comments:				
		-						
50 ——								
		WELL MON	NITORING DATA:					
Andre of the		Date Time	Reading	Corr.	Depth	SWL	Ву	,
55		12/20/99 11:10		1	0.6' bgs		WE	3L
						***************************************		
60 ——								
							**-	
65 ——							l	J

# BORING LOG

BORING NO .: GLA-1

PAGE: 1 OF

GW DEPTH: 99.5 feet TOTAL DEPTH: 300 feet

JOB NO.: 9539 SITE LOCATION: GREGORY CANYON

DATE STARTED: 11/19/96 DATE FINISHED: 11/20/96

Į.	PRILLING METHOD: CONTRACTOR: LOGGED BY:					ELEVATION: NORTHING: EASTING:	ND ND ND	•
	α	S ZZE	Š	Z	N N N N N N N N N N N N N N N N N N N			

TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE	INCHES	SAMPLE NO.	DEPTH IN	FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11/19 10:12							5				SP GP	RESIDUAL SOIL mixed with decomposed rock. Yellowish brown (10R5/4). Drills as a coarse SAND. Moderately to highly weathered. Dominant lithic fragments are decomposed LEUCOGRANODIORITE with iron oxide staining.	Dry.
						Management of the second of th	15			- / / / / / / / / / / / / / / / / / / /		Decomposed GRANODIORITE with quartz. Light brownish gray (2.576/2) to brown (10YR5/3). Oxidized with altered biotite and some pink (7.5YR7/4) potassium—feldspar. Cut by quartz feldspar dikes. BONSALL TONALITE. Gray (2.5Y5/1). Drills as a fine to medium sand with some coarse fragments. Highly to moderately weathered; some iron oxide staining; altered micas.	Damp.
							25-			V 3 1 V 3 V 3 V 3 V 5 V 5 V 5 V 5 V 5 V 5 V 5		(20') — slightly less weathered (moderately weathered) and more felsic.	
	10:36						35-	-12/	16/96	V 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		(30') — TONALITE drills as a fine sand with minor coarse sand — fine gravel size fragments. Color changes to gray (2.5Y6/1).	
12:14		1.17					45-			ン   リン   リン   リン   リン   リン   リン   リン		GRANODIORITE/TONALITE lithic fragments. Slightly weathered and oxidized. Gray (N6); many fragments display foliation; rare pinkish white (5YR8/2) potassium feldspar, probably as dikes.	
	40.74						50 55			2 × × 2 × 1 / / / / / / / / / / / / / / / / / /		GRANODIORITE. Increase in felsic lithic fragments. Gray (10YR6/4) to light gray (10YR7/1). More quartz and feldspar dikes; foliation is less common. Iron oxide staining on quartz and feldspar.  GRANODIORITE/TONALITE. Less felsic fragments. Color change to gray (5Y5/1 to N5); with very minor pinkish white to	
12:35	12:31						60-			1 V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		reddish yellow (5YR8/2 to 7.5YR7/6) potossium feldspar; very minor iron oxide staining.  CONTINUED ON NEXT PAGE	<u></u>

# BORING LOG

BORING NO .: GLA-1

PAGE: 2 OF

JOB NO.:

9539 SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE - ENVIRONMENTAL DATE STARTED: DATE FINISHED: 11/19/96 11/20/96 ELEVATION: ND NORTHING: ND

ND

EASTING:

GW DEPTH: 99.5 feet TOTAL DEPTH: 300 feet

LOGGED BY: T. REEDER

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	FEE	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGY FORMATION	DESCRIPTION	COMMENTS
12:35						60			V		GRANODIORITE/TONALITE. Less felsic fragments. Color change to gray (5Y5/1 to N5); with very minor pinkish white to reddish yellow (5YR8/2 to 7.5YR7/6) potassium feldspar; very minor iron oxide staining.  TONALITE. Gray (N6). Slightly weathered.	
						70 75			V		Mineralogy is hornblende, pýroxene, feldspar (plagioclase), and minor quartz. (70') — slightly darker; less potassium feldspar.	
12:59	12:57	0.91				80-			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			(80') — dry.
w wydeinyd daw ydd dd yngolyd ac ymdy blan y ban a bannau a b	e e de estado de estado de estado de estado de estado de estado de estado de estado de estado de estado de esta	0.91				85 90				A complete the com		
47.04	13:21					95 100			V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7		(95') — mixed TONALITE and GRANODIORITE. Darker gray (N5) and light gray (N7) (TONALITE inclusions in GRANODIORITE?).	
3:24						105-			1 V 3 T V 3 T V 3 T			
		1.05				110-			V		(110') less segregated GRANODIORITE/	
13:46	13:43					120-			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7 4	(115') — slightly more felsic lithic fragments. GRANODIORITE/TONALITE with slightly oxidized quartz/feldspar dikes. (120') — More uniform appearance, Felsic fragments absent — no dikes.	

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

CONTINUED ON NEXT PAGE

# BORING LOG

BORING NO.: GLA-1

PAGE: 3

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL LOGGED BY: T. REEDER

DATE STARTED: DATE FINISHED: 11/19/96 11/20/96

ELEVATION: NORTHING: EASTING: ND ND ND GW DEPTH: 99.5 feet TOTAL DEPTH: 300 feet

TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	1	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
3:46						120			7	<b></b>	(120') — More uniform appearance. Felsic fragments absent — no dikes.	
						125			1 V Z 7 V		(125') — same as above. GRANODIORITE/ TONALITE. Gray (N5). Slight foliation on some fragments.	Dry.
		0.91				130			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1 1	GRANODIORITE/TONALITE. Gray (N5).	
						135		_	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
14:12	14:08					140-		_	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
and the second s						145			V			
						150			V			
						155—		_	2 7 V 2 7 V			
4:37	14:33	0.95				160		-	< A A A A A A A A A A A A A A A A A A A		(160') — slightly more felsic fragments, possibly dikes in the TONALITE.	
						165-			V		(165') - less felsic fragments; more	
						170-			< A / A / A / A / A / A / A / A / A / A		mafics.	
						175			V			
	14:56	1.05		,					V			
5:25			AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA			180		1   1	7 × × × × × × × × × × × × × × × × × × ×		CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO .: GLA-1

PAGE: 4 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL

DATE STARTED: 11/19/96
DATE FINISHED: 11/20/96
ELEVATION: ND
NORTHING: ND

GW DEPTH: 99.5 feet TOTAL DEPTH: 300 feet

TME TART	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	- - - -	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
5:25						180		_	V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
									V < 1			
						185-			7 2 4 2 4 4 2 4 4			
									V < \			
						190-		-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	(190') - some very minor iron oxide	,
									17 × 1 × 1 × 1 × 1		staining along fractured surfaces.	
						195-			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		GRÁNODIORITE/TONALITE. Gray (N5). Slightly	
			:						1 7 4 V V 4.	4	weathered to fresh.	
	15:47	0.91				200-		_	2 × ×			
5:50									12 4			
						205-			1 2 X			
						203-			1 V V	1	(205') — increase in felsic minerals (quartz and feldspar); probably	
									7 7 7 V	1	GRANODIORITE dikes in the TONALITE. White (N8) felsic fragments represent	
						210-	-	×	V < A		approximately 35-40% of material.	(210') — dampness of outside of drill stem.
	,								ν < Λ 3 = 7			duside of drift sterili
						215-		-	ν < Λ \ 7		(215') - felsic fragments increase to	
									1 2 7 7 Y	4	50%.	
6:12	16:09	1.05				220-	ļ		170		LEUCOGRANODIORITE. White (N8 to 10YR8/1)	
10:12											with minor inclusions of TONALITE. Slightly weathered; minor iron oxide staining; with pinkish white (5YR8/2) potassium feldspar.	
						225-		-	1 V V V	.]	GRANODIORITE/TONALITE with felsic dikes. Gray (N5) TONALITE with approximately 30%	(223') — damp.
									2 V V V	]	LEUCOGRANODIORITE dikes.	
:						230-		+	1 7 7		(230') - 5% felsic fragments.	
									2 V			
						235-		_	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	4	(235') — felsic fragments increase to	
									\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	4	40%. LÉUCOGRANODIORITE dikes in TONALITE. Light gray (N6). Slightly oxidized.	
	16:30	1.11				240		_	1 V V	4	(240') - felsic fragments represent	
1/20								-	ν V > < Λ	,	approximately 50% of the material (QUARTZ	

# BORING LOG

BORING NO .: GLA-1

PAGE: 5 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/19/96
DATE FINISHED: 11/20/98
ELEVATION: ND
NORTHING: ND EASTING: ND

GW DEPTH: 99.5 feet TOTAL DEPTH: 300 feet 99.5 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11/20 7:35						240			1 V \ 2 7 V \ \ 1 V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(240') — felsic fragments represent approximately 50% of the material (QUARTZ GRANODIORITE?).	
	- 4-					245		-	7 V		(245') — felsic fragments less than 5% (GRANODIORITE with 30%+ quartz and feldspar). Light gray (N6); with pink (5Y7/4) potassium feldspar; some epidote and chlorite alteration.	Wet.
7:41	7:47	0.83				250			7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V	The second secon	(250') — no pink potassium feldspar. Increase in GRANODIORITE/TONALITE fragments foliation.	
	7.50	0.50				255			1 V		(255') — darker. TONALITE with little felsic fragments. Gray (N5). Very minor quartz/ feldspar dikes.	Dry.
8:08	7:59	0.56.				260-			V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z V < Z		TONALITE. Dark gray (N5). Hard; minor foliation of mafic minerals.	
	8:16	1.25				265-			V			(265') — enough water flowing into the hole to wet sample when adding rod.
8:17	0.10	1.20				270			7 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7		(270') — Migmatitic texture on some fragments. GRANODIORITE/TONALITE with minor epidote and chlorite alteration. Slightly more felsic than above.	
	8:29	0.83				275-			1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V			
8:42						280-			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(285') — white zeolite coating on fracture surface on one lithic fragment. Very minor	Damp.
	8:53	0.91				285-			7 V	7	iron oxide staining on some fragments. Minor chlorite and epidote alteration(290') — very minor pinkish white (5Y8/2) potassium feldspar.	
						290-			7 0 7 0 7 0 7 0 7 0 7 0 7 0 7 0 7 0 7 0		(295') — no visible potassium feldspar (5YR8/2). NOTES: 1. Total depth of borehole 300 feet.	
	9:07					295-		-	7 V		Conductor casing set to 20 feet.     Open hole interval (exposed bedrock)     between 20 and 300 feet below ground surface.	
	9:07					300-			7.3		<ul> <li>4. Groundwater first encountered between 200 and 220 feet.</li> <li>5. Depth to water on 12/16/96 measured at 37.10 feet.</li> </ul>	

LOGGED BY: T. REEDER

# BORING LOG

BORING NO .: GLA-2

PAGE: 1 OF

JOB NO.: 9 SITE LOCATION: 0 DRILLING METHOD: 0 CONTRACTOR: L

: 9539 : Gregory Canyon : Dual—Wall Reverse, Air : Layne — Environmental DATE STARTED: 11/18/96
DATE FINISHED: 11/19/96
ELEVATION: 375 feet
NORTHING: ND
EASTING: ND

GW DEPTH: 70 feet TOTAL DEPTH: 250 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11/18 11:20	:					5			SM	RESIDUAL SOIL. Loose, non-cohesive, with coarse SAND to fine GRAVEL-sized rock fragments. Yellowish-brown (10YR5/4).	Dry.
						10		V 7 V 7 V	2	BONSALL TONALITE. Strongly weathered (probably "C" horizon). Brown (10YR5/3). Drills as a fine silty sand(10') — becomes coarser with fine sand	Damp.
į		0.67				15-		V		to medium gravel—sized fragments; coarser fragments are dominantly composed of quartz and feldspar (probably derived from a LEUCOGRANODIORITE dike).	
11:42	11:50					20-		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(20') — slightly coarser.	Drier.
						25		27/2//2		GRANODIORITE. Gray (2.5Y5/1) to grayish brown (2.5Y5/2). Drills as a loose fine sand with minor coarse sand—size fragments of quartz and feldspar.	Dry.
12:26	12:05	0.87				35		7/1/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/		LEUCOGRANODIORITE dike (?). Color changes to light gray (2.5Y7/1) to gray (2.5Y6/1). Drills as a very fine sand; minor coarse sand—size fragments; rare gravel—size fragments. Increase in felsic minerals (quartz and feldspar); decrease in mafics(35'-40') — sample consists only of coarse fragments. Pale red (2.5YR7/2).	Dry. Drilling becomes more difficult from this depth on.
13:25	12:48					40				(40') — LEUCOGRANODIORITE dike (?). Gray (2.5Y7/1). Very felsic.	Dry.
						45		1/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2		(45') — GRANODIORITE. Slightly darker, but still gray (2.5Y7/1).	
						55-		5/		(50') — darker gray (2.5Y6/1. Increase in mafics (biotite). (55') — slightly darker gray (2.5Y6/1 to	Dry.
13:40	13:37	1.67				60		1/2/1/2/1/2		2.5Y5/1). Drills as a very fine sand, with minor coarse sand and medium gravel fragments(60') — iron oxide staining on fragments (probably weathered fracture). Gray (7.5YR5/1).	

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

CONTINUED ON NEXT PAGE

# BORING LOG

BORING NO.: GLA-2

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/18/96
DATE FINISHED: 11/19/96
ELEVATION: 375 feet
NORTHING: ND EASTING: ND

GW DEPTH: 70 feet TOTAL DEPTH: 250 feet

		70LU U	i i nc		···········						EASTING: NU	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FEE	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION COMMENTS	
3:40						60					(60') — iron oxide staining on fragments (probably weathered fracture). Gray (7.5YR5/1).	
			Paraconaria discrimenta de la compansión			65-					GRANODIORITE. Gray (7.5YR5/1). Moderately weathered with iron oxide staining, probably along fractures. Some GRANODIORITE	··
			trace, market market market market market market market market market market market market market market market			70-	12/	16/96			fragments display foliation(70') — less oxidation. GRANODIORITE/ TONALITE.	
						75-		_				
4:02	13:58	1.11			and development of marting and a second seco	80-		_			(80') — slightly weathered. Very little iron	
						85		_			(80') — slightly weathered. Very little iron oxide staining. Color change to gray (N6 to N5) with some bluish gray (5B5/1). (85') — less weathered. No iron oxide	
						90		_			stàining.	
						95-						
	14.20	1.11							的 多		(95') — slightly less mafic. Pronounced foliation on many fragments.	
4:24	14;20		manuscraft and and definition of the state o			100-						
						105-						
						110-						
						115-		]   				
4:44	14:41	1.18				120-					GRANODIORITE. Gray (N5). Slightly weathered.	
									1/2		CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-2

PAGE: 3 OF

JOB NO.:

9539 SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER DATE STARTED: DATE FINISHED: ELEVATION: NORTHING: 11/18/96 11/19/96 375 feet ND **EASTING:** ND

GW DEPTH: 70 feet TOTAL DEPTH: 250 feet

	LOC	SCED BY	: T. RI	EEDER							EASTING: ND	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
14:44						120— 125—			5/		GRANODIORITE. Gray (N5). Slightly weathered.	
						130-			75555 75555		GRANODIORITE with minor quartz feldspar dikes. Gray (N5). Slightly weathered.	
15:02						140					(135') — lighter color; gray (N6) to light gray (N7). Less mafics; more quartz and feldspar.	(140') — damp.
						145						
						150— 155—						(150') — moist.
15:36	15:25	0.87				160-				**************************************		(160') — possibly moist will let hole sit 15 minutes to see if water
						165-						seeps into the hole. (165') — wet.
						170— 175—			とうにうら			(170') — drilling dry again; probably very low seepage into hole.
16:13	15:59	0.87				180-						(180') — moist; will let hole sit 15 minutes before putting in next stem. Refuel.
		L				<u> </u>		1	i		CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-2

PAGE: 4 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/18/96
DATE FINISHED: 11/19/96
ELEVATION: 375 feet
NORTHING: ND EASTING: ND

GW DEPTH: 70 feet 250 feet TOTAL DEPTH:

	w	9000 0	; 1. KI	LULN		······································					EASTING: ND	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	1	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
16:13						180			スケム		same as above.	(180') — moist; will le hole sit 15 minutes before putting in next
						185-		_				stem. Refuel. (181') — wet. (185') — damp.
				references and second land								(100 ) — damp.
						190			1 V V A A		TONALITE. Darker gray (N5 to N4), with white (N8) fragments mixed in composed of	
		and the address and the same an		arreferiteriturit man de mande		405		]   	127 127		quartz and feidspar (probably derived from quartz/feidspar dikes in TONALITE).	
1/19 6:45		The season of th		- Adventod de la linea de la la la la la la la la la la la la la		195	74 W L-144W		1 × × ×		TONALITE. Gray (N5) to dark gray (N4), with white (N8) fragments of quartz/feldspar mixed in (<10%) (probably derived from	
6:54		Market and American Andrews and American Andrews and American Andrews and American Andrews and American Andrews		***************************************		200-		_	V 3 1 V V		quartz/feldspar dikes in TONALITE).	
0.54				AAAAA miraka sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da sa da s					\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
		- American Control of the Control of				205-		_	レベン シマ			
						010			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		(210') pink (5YR8/3) potassium	
						210-			レムイ レニイ マペフ マペフ		feldspar fragments present in mix. Increase in felsic fragments up to 15-20% of	
						215-		_	1 V V A A A		material (TONALITE with feldspathic dikes). Some chlorite alteration of mafics. (215') — decrease in felsic fragments to	
			***************************************						ν < /		approximately 5%. No obvious potassium— feldspar fragments.	
7:24	7:18	0.83				220		-	ν </td <td></td> <td></td> <td>(220') — still drilling damp.</td>			(220') — still drilling damp.
						200			4 V A V A V A V A V A V A V A V A V A V	I		(223') - very minor water in hole when
						225			17 17 14 14 14 14 14	1		adding rod.
						230-			1 V V × V × V × V × V V × V V × V V V V		(230') — same as above.	Drilling drier to just
			***************************************						V 3 7 V 1			slightly damp.
						235-		-	レベクスフィンソ			(235') — drilling wet again; driller thinks the is water pressure;
	7:50	0.77							1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			material is clogging up cyclone.
8:04	1.00	0.77				240-		<u> </u>	1 V V A 7		TONALITE/DIORITE. Mafic fragments are dark gray to very dark gray (N4 to N3) when wet. Less than 3% felsic fragments.	
		ļ	<u> </u>	<u> </u>					1		CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO .: GLA-2

PAGE: 5

JOB NO.: SITE LOCATION: DRILLING METHOD: CONTRACTOR:

9539 GREGORY CANYON DUAL-WALL REVERSE, AIR LAYNE — ENVIRONMENTAL LOGGED BY: T. REEDER

DATE STARTED: DATE FINISHED: 11/18/96 11/19/96 ELEVATION: NORTHING: 375 feet ND EASTING: ND

GW DEPTH: 70 feet TOTAL DEPTH: 250 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	ָ בַּבָּב	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGY FORMATION	DESCRIPTION	COMMENTS
	8:19		WATER SAMPLE SAMPLE INTERVA	SAMPLE SI INCHES	SAMPLE N	245 250 255 260 270		LEVATIO	NATERIA NATERIA NATERIA NATERIA SYMBOL		TONALITE/DIORITE. Mafic fragments are dark gray to very dark gray (N4 to N3) when wet. Less than 3% felsic fragments. (250') — some epidote alteration of plagioclase; some chlorite alteration of mafics.  NOTES:  1. Total depth of borehole 250 feet. 2. Conductor casing set to 10 feet. 3. Open hole interval (exposed bedrock) between 10 and 250 feet below ground surface. 4. Groundwater first encountered at 150 feet. 5. Depth to water on 12/16/96 measured at 69.73 feet.	COMMENTS
						285-						
						300-						

# BORING LOG

BORING NO.: GLA-3

PAGE: 1 OF

JOB NO.: SITE LOCATION:

9539 GREGORY CANYON DUAL—WALL REVERSE, AIR

DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/25/96
DATE FINISHED: 11/26/96
ELEVATION: 330 feet
NORTHING: ND
EASTING: ND

GW DEPTH: 21 feet TOTAL DEPTH: 150 feet

IME TART	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGY FORMATION	DESCRIPTION	COMMENTS
1/25 2:15						0	-	28/4/502/26/26	ண	TOPSOIL/COLLUVIUM: SILTY SAND with GRAVEL; sub—angular clasts of TONALITE and LEUCOGRANODIORITE; loose. Dark grayish brown (10YR4/3).	Moist.
						10-1			SW	ALLUVIUM: SAND, medium— to coarse—grained, minor fines, with fine— to coarse—grained angular gravel—size fragments of mostly LEUCOGRANODIORITE with some TONALITE.	(5') — damp.
						15				Brown (10YR5/3).  SAND with minor fine— to coarse—grained GRAVEL. Light yellowish brown (2.5Y6/4) to very pale brown (2.5Y7/3).	(10') — damp.
						20	Y		SW		
						25	Z16/96	3			
						35-		ががが		DECOMPOSED LEUCOGRANODIORITE (GRUSS). Light olive brown (2.5Y5/6), highly weathered; Fe-oxide staining. Drills as a fine- to coarse-grained sand/silty sand; soft, loose.	(30') – damp.
						40		11/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1		DECOMPOSED LEUCOGRANODIORITE. Olive (575/3) with Fe-oxide staining. Highly weathered and decomposed.  DECOMPOSED LEUCOGRANODIORITE. Light	(40') — damp.
						45		1/2/1/2		olive brown (2.5Y5/4). Drills as fine— to coarse—grained sand with minor gravel. Highly weathered and decomposed(45') — color change to olive brown (2.5Y4/4).	
						50-		15 75 15 15 15 15 15 15 15 15 15 15 15 15 15		DECOMPOSED LEUCOGRANODIORITE. Pale brown (10YR6/3) to yellowish brown (10YR5/4). Drills as loose, soft, medium—to coarse—grained sand. Potassium feldspar is reddish yellow (7.5YR6/6-6/8) with Fe-	(50') — damp.
						55		うかいかい	( ) ( ) ( )	oxide staining(60') — cuttings change in color to pale olive (5Y6/3); larger lithic fragments are gray (10YR6/1) to light brownish gray	
15:33	12:45	2				60		ケスケス		(10YR6/2); decrease in oxidation staining; color intensity of patassium feldspar decreases to pink (7.5YR8/3) to pinkish gray (7.5YR7/2).  CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-3

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/25/96
DATE FINISHED: 11/26/96
ELEVATION: 330 feet NORTHING: ND

GW DEPTH: 21 feet TOTAL DEPTH: 150 feet

TIME START	TIME STOP	rate, FT/Min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGY FORMATION	DESCRIPTION	COMMENTS
15:33						70 75 80	<u> </u>	ていてかるかっかっかっかっかっかっかっかっかっかっかっかっかっかっかっかっかっかっか		(10YR7/6) and groyish brown (10YR5/2) with minor reddish yellow (7.5YR7/6) potassium feldspar(70') — cuttings are light olive brown (2.5Y5/4)(75') — cuttings are olive brown (2.5Y4/3).	(65') — groundwater first encountered. Moderately wet. (70') — damp. Hole produces water at c rate of about 15 gpm.
						85		7577751 7577751		(85') — slightly darker, more mafic.	
						95		大 マ N ハ マ N N N N		GRANODIORITE/TONALITE. Composed mostly of plagioclase, quartz and mafics. Slightly weathered. Dark greenish gray (5B4/1); larger lithic fragments are gray (N5); potassium feldspar is reddish yellow (7.5YR6/6). Less than 3% Fe—oxide staining on some quartz and feldspar dikes.	(90') - moist.
16:03	16:01	1.43				100		1 レンフ Vベフ Vベフ		TONALITE. Relatively unweathered. Gray (N5) with little Fe—oxide staining.	
						110		V			
	16:31	0.71				115		V			
11/26	1010	3.71				120	-	7 V V 7 V	1	(120') - minor (less than 5%) potassium feldspar.  CONTINUED ON NEXT PAGE	

#### BORING LOG

BORING NO.: GLA-3

PAGE: 3 OF

JOB NO.: 9539 SITE LOCATION:

GREGORY CANYON

DUAL-WALL REVERSE, AIR LAYNE - ENVIRONMENTAL DRILLING METHOD: CONTRACTOR:

DATE STARTED: 11/25/96 DATE FINISHED: 11/26/96 ELEVATION: 330 feet NORTHING: ND

ND

EASTING:

GW DEPTH: 21 feet TOTAL DEPTH: 150 feet

LOGGED BY: T. REEDER

SAMPLE SIZE SAMPLE SAMPLE Z. INCHES SAMPLE DEPTH FEET TIME TIME DESCRIPTION COMMENTS STOP START 120 ...(120') - minor (less than 5%) potassium 11/26 feldspar. 125 130 TONALITE. Gray (N5). Slightly weathered with less than 1% feldspar. Minor quartz/feldspar dikes. 135 7:19 7:25 140 ...(140') - color change to dark gray (N4). 1,67 145 7:31 150 Notes: 1. Total depth of borehole 150 feet. 2. Conductor casing set to 45 feet. 3. Open hole interval (exposed bedrock) 155 between 45 and 150 feet below ground surface. 4. Groundwater first encountered at 65 5. Depth to water on 12/16/96 measured at 23.84 feet.

# BORING LOG

BORING NO.: GLA-4

PAGE: 1

JOB NO.:

9539

SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOGGED BY: T. REEDER / M. VINCENT, CEG

DATE STARTED: DATE FINISHED: 11/26/96 11/27/96 905 feet ELEVATION: NORTHING: ND

103.2 feet GW DEPTH: TOTAL DEPTH: 240 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	<u> </u>	ELEVATION IN FEET	MATERIAL Symbol	USCS/GEOLOC FORMATION	DESCRIPTION	COMMENTS
1/26						0				SM	TOPSOIL: SILTY SAND with CLAY to CLAYEY SAND. Reddish brown (5Y3/3) to dark brown	Moist.
						5-					(7.5YR3/3), soft, loose. Less than 6"thick.	
										SP	Coarse SAND with fine GRAVEL and angular felsic clasts. Pale yellow (2.5Y7/4) to very pale brown (10YR7/4).	(0.5') - damp.
						10			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u> </u>	TONALITE:	Damp.
									1 V X		Moderately weathered with minor quartz/ feldspar dikes.	' 
						15-		-	V < A>		TONALITE with less than 30% of quartz/feldspar dikes. Gray (N5).	
									V < A>			
						20-			トマント		(20') — increase in felsic cuttings to 50%.	
						25			> < \> > \			
						20					LEUCOGRANODIORITE DIKE. Yellow (10YR7/6) with Fe—oxide staining. Cuttings are approximately 40% TONALITE and 60% LEUCOGRANODIORITE.	Damp.
						30				_,,,,	LEUCOGRANODIORITE DIKE (30-35%) in TONALITE. Weathered potassium feldspar is	
						35					pink (5Y7/4). Cuttings are somewhat oxidized.	
11/27 6:58	:				:	40-			1 7 4 1 7 4 2 4 7 4 2 4 7 7	1	TONALITE. Greenish gray (5GY6/1), phaneritic with fine crystallinity and anhedral to	
						45		-	1 V X X		subhedral crystals. Moderately weathered and hydrothermally altered. Hornblende and biotite phenocrysts show moderate chlorite—	
									7	ļ	epidote hydrothermal alteration.	
						50			1 V V	]	(49') — color change to greenish gray (10BG6/1).	
						55			7 × × × × × × × × × × × × × × × × × × ×		TONALITE. Bluish gray (10B5/1), phaneritic	
									1 V X X Y X Y X	]	with fine crystallinity and anhedral to subhedral crystals; biotite— and hornblende— rich. Weak alteration to chlorite—epidote.	
									[' < \' >	{		

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

CONTINUED ON NEXT PAGE

# BORING LOG

BORING NO .: GLA-4

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOGGED BY: T. REEDER / M. VINCENT, CEG

DATE STARTED: 11/26/96
DATE FINISHED: 11/27/96
ELEVATION: 905 feet NORTHING: ND EASTING: ND

GW DEPTH: 103.2 feet TOTAL DEPTH: 240 feet 103.2 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	1	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
7:27						65		_	V		(61') — Slightly higher content of biotite than above(61'-65') — weak limonite staining on fracture surfaces. Slightly more chloritized biotite than above(65') — weak faliation as evidenced by preferred orientation of biotite crystals.	
						75		-	7 V C 7 V C	Liverikkusseerdoleimikkoneerediiserdikseereediiseelikseereen	(72') — slightly more felsic than above, with slight increase in crystal size from fine— to medium—crystallinity feldspar and hornblende phenocrysts(75') — same as above.	(70') – dry.
7:51		~0.95				80-		~	7 V		(80') — same as above.	Dry.
						85-		_	7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V	3	(85') — same as above(86'—92') — fracture zone with minor limonite and pyrolusite mineral cootings on fracture surfaces.	
8:03						95-			- レンチ レムチ レムチ レンカ V< フ V< フ V< フ V< フ V ス	1	(94') — aplite dike(s) consisting mostly of potassium feldspar with minor quartz(95'-100') — minor limonite staining visible on fracture surfaces.	(90') dry.
8:50						100		<u> </u>	V	\ \ \ \ \	(100'-105') — no visible oxidation.	Dry(103.2') — groundwater sounded on 12/02/96.
						110			7 V		(110'-115') light bluish gray (588/1), feldspar— and quartz—rich felsic dike(s)(116'-120') — no visible dikes(120'-137') — abundant fragments of	Dry.
9:22						115-			1	7 4	medium— to coarse—grained potassium—feldspar and minor quartz dike(s). Host rock TONALITE shows evidence of moderate chlorite—epidote hydrothermal alteration. Fractures show possible zeolite veining with minor oxidation staining on non—mineral	
						120-			V	4	filled fractures. Host rock TONALITE is bluish gray (5PB5/1), aphanitic to phaneritic (very fine— to fine—crystallinity) with abundant biotite and hornblende.  CONTINUED ON NEXT PAGE	Dry.

# BORING LOG

BORING NO.: GLA-4

PAGE: 3 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOGGED BY: T. REEDER / M. VINCENT, CEG

DATE STARTED: 11/26/96
DATE FINISHED: 11/27/96
ELEVATION: 905 feet

NORTHING: ND EASTING: ND

GW DEPTH: 103.2 feet TOTAL DEPTH: 240 feet

8:24  140  145  155  160  165  165  165  165  165  16	TIME START	TIME STOP	rate, ft/min	WATER Sample Interval	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	1334	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
8:24  130  135  136  137  138  8:08  140  150  150  150  150  150  150  150										7 V		medium— to coarse—grained potassium— feldspar and minor quartz dike(s). Host rock TONALITE shows evidence of moderate chlorite—epidote hydrothermal alteration. Fractures show possible zeolite veining with	(120') — dry.
8:24  150  140  145  150  150  150  150  15							130-			V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		filled fractures. Host rock TONALITE is bluish gray (5PB5/1), aphanitic to phaneritic (very fine— to fine—crystallinity) with abundant	
8:24  155  156  157  160  175  175  175  175  175  175  175  17				A PART AND A PART AND						7 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7		·	surface on 12/02/96 at
8:24  150  155  160  160  160  175  175  175  175  175  175  175  17	8;08									2 y V			No free groundwater whi drilling or stacking rods.
8:36  160  160  160  160  160  170  170  17	8:24			The state of the s					<b>Y</b>	1 V V	2		groundwater while drilling
8:36  160  160  160  160  160  160  160  1							155-			7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 4 7	dark bluish gray (1084.5/1) with increase in felsic mineral content and increase in	
oxidation of fractures. Rock is unfractured to weakly fractured. No chlorite—epidote alteration visible.  Hard to very hard dr No free groundwater encountered.  175(175') — same as above.	8:36						160-			7 V		crystallinity; anhedral to subhedral feldspar crystals. Cuttings show a weak foliation as evidenced by the segregation of mafic and felsic minerals, and by the preferred	
No free groundwater encountered.							165-			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		oxidation of fractures. Rock is unfractured to weakly fractured. No chlorite—epidote	Hard to very hard drillin
							170-	1			7 4 2 7 4 1 7		No free groundwater
Hard to very hard di No free groundwater										1 V < A	4	(175') — same as above.	Hard to very hard drillin

## BORING LOG

BORING NO.: GLA-4

PAGE: 4 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOCGED BY: T. REEDER / M. VINCENT, CEG

DATE STARTED: 11/26/96
DATE FINISHED: 11/27/96
ELEVATION: 905 feet

NORTHING: ND EASTING: ND

GW DEPTH: 103.2 feet TOTAL DEPTH: 240 feet

TIME START	TIME	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FEE	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
9:10						180			V			
						190-		-	V		(185') — same as above.	Hard to very hard drilling No free groundwater
						195-		- -	V	1	(190') — better developed foliation with depth. No visible jointing or fracturing(195'-240') — same as above.	encountered.
9:43						200		T	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			Hard to very hard drilling No free groundwater encountered.
:		i				205-		1 1 1	V			
						210-			ペフ V マ フ V く マ V く フ V く フ V く フ V く フ V く フ V く ろ V へ M へ M へ M へ M へ M へ M へ M へ M へ M へ	4		Hard to very hard drilling No free groundwater encountered.
						215-			1 V A T V A T	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Hard to very hard drilling.
10:23						220-			V	7.4		No free groundwater encountered.
						225-		<u> </u>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			Hard to very hard drilling
						230-		~	A 1 レンサ シムイ 1 V A		Notes:  1. Total depth of borehole 240 feet.	No free groundwater encountered.
	11:08					235-			1 V A 7 V A		2. Conductor casing set to 30 feet. 3. Open hole interval (exposed bedrock) between 30 and 240 feet below ground surface. 4. Groundwater first encountered between	
	11:08					Z4U~					<ul><li>4. Groundwater tirst encountered between 103 and 140 feet.</li><li>5. Depth to water on 12/16/96 measured at 149.93 feet.</li></ul>	

## BORING LOG

BORING NO.: GLA-5

PAGE: 1 0F

JOB NO.: 9539 SITE LOCATION: GREGORY CANYON DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER DATE STARTED: 11/20/96
DATE FINISHED: 11/21/96
ELEVATION: 930 feet
NORTHING: ND
EASTING: ND

GW DEPTH: 41 feet TOTAL DEPTH: 190 feet

		оош и	1. 1.								EASTING: NU	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
1/20 11:20				- Action to the control of the contr		5-				SM SP	COLLUVIUM/RESIDUAL SOIL: SILTY SAND with coarse—grained SAND and fine—grained GRAVEL and minor CLAY; sub—angular sand and gravel size clasts of TONALITE and LEUCOGRANODIORITE. Dark reddish brown (5YR3/3).	Damp.
40 may 20						15- 20-			レスーレス・レス・レス		WEATHERED TONALITE. Light olive brown (2.5Y5/3). Drills as a medium— to coarse—grained sand. Minor quartz and feldspar dikes.	Damp. (20') — damp.
						25 30-			1 V C 7 V C		TONALITE. Gray (2.5Y6/1) to light brownish gray (2.5Y6/2). Moderately weathered. Drills as a fine— to coarse—grained sand with minor fine—grained gravel size fragments. Minor quartz/feldspar dikes.	Less damp.
5:57						35-	117	 21/96 <u>▼</u>			TONALITE/QUARTZ DIORITE. Olive (5Y5/3)	
						<b>4</b> 5	12/	16/98	V		cuttings, with black (N2.5) and dark gray (N4) lithic fragments. More mafic than above. Drills as a fine—grained sand.	
						55					(50'-55') — color change to light brownish gray (2.5Y6/2) to olive gray (5Y6/2).	
				this lan		60-			V		TONALITE. Gray (5Y6/1). Moderately weathered. Less mafic than above.  CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO .: GLA-5

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

11/20/96 11/21/96 930 feet DATE STARTED: DATE FINISHED: FI EVATION:

GW DEPTH: 41 feet TOTAL DEPTH: 190 feet

	MODELLING	LIP
	***************************************	
	EASTING:	ND

TIME TART	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						60			V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7 V < 7		TONALITE. Gray (5Y6/1). Moderately weathered. Less mafic than above.	
						65~			V			
						70-			V			
07	16:24					80-			1	1 1	(75'-80') — slightly more felsic, gray (2.5Y6/1) TONALITE; cuttings are sand—size with quartz/feldspar fragments.	
5:27						85-		-			TONALITE/QUARTZ DIORITE. Gray (N5) lithic fragments. More mafic than above; chlorite alteration of mafics.	
						90-			V A 1 V A 1		(85'-90') — felsic cuttings increase to 20% (probably indicates quartz/potassium feldspar dikes in the TONALITE/QUARTZ DIORITE). Felsic fragments have pink (5YR7/4) potassium feldspar. Chlorite	
						95					olteration of mafics in the TONALITE.  GRANODIORITE. Bluish gray (586/1 to 5/1)	(93'-96') - *soft" drilling.
	an palaman malancian					100-		Ţ			with minor reddish yellow (5YR7/6); potassium feldspar and quartz cuttings. GRANODIORITE fragments are chloritized. White coatings on some fractures (zeolite?).	(100') moist.
						105-					(100') — decrease in felsic cuttings to less than 10%. Majority of cuttings are of TONALITE with granodiorite dikes; some feldspar and chlorite alteration of mafics; gray (N5).	(100 ) ~ Moist.
721				<b>.</b>	Anna da de de la companya de de de de de de de de de de de de de	110		-	1 V Z Z V Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z		TONALITE. Gray (N5). Moderate to slightly weathered and fractured.	(105') — damp.
					ng pinapaga manapanama paga paga paga paga paga paga paga p	115		<del>-</del>	2		(110') — very minor fragments of quartz/ feldspar with minor mafics as veins/dikes in TONALITE.	
***************************************	7:35					120			V			6.43
									1 V < V > V = V = V = V = V = V = V = V = V = V =		CONTINUED ON NEXT PAGE	(120') — water comir up hole.

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

### BORING LOG

BORING NO.: GLA-5

PAGE: 3 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOCGED BY: T. REEDER

DATE STARTED: 11/20/96
DATE FINISHED: 11/21/96
ELEVATION: 930 feet NORTHING: ND EASTING: ND

GW DEPTH: 41 feet TOTAL DEPTH: 190 feet

TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	1 1 1	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIA FORMATION	DESCRIPTION	COMMENTS
7:35						120		_	ν \ ν < Λ> Δ γ _ Δ			(120') — water coming up hole.
	emberhapinghiphologich condense					125-		_	V < A > A 1 V < A > A 1 V < A > A   V < A > A   V < A > A   V < A > A   V < A > A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A   V < A			
						470			ンフィレベス> レベス> コフィンス>			
						130-			1 V V V V V V V V V V V V V V V V V V V		TONALITE. Gray (N5). Slightly weathered; fractured. Chlorite alteration of mafics. Less than 1% quartz/feldspar fragments from	
						135		_	1 V \ 2 \ 1 \ V \ 2 \ 2 \ 1 \ 1 \ 2 \ 2 \ 2 \ 2 \ 1 \ 2 \ 2		than 1% quartz/feldspar fragments from dikes, and a few rare fragments of zeolite(?) from fracture infilling; minor iron oxide staining.	
						140-			V			
									1 V V V V V V V V V V V V V V V V V V V			
						145-			シュイレン イフ V C Z			
						150			1 V Z Z V Z V Z			
						155-			>7 V X 7			
						160-			V			
						100			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
						165		1	V		(165') — increase in felsic fragments to 40%.	Sample is wet.
9:08	9:07	0.54	<b>.</b>	**************************************		170-		1	7 V 7 V	1	(170') — increase in quartz/feldspar dikes. Decrease in chlorite alteration.	Drier.
						175-			2 2 V V V V V V V V V V V V V V V V V V			
						175-			フマスフマ	1	(175') — decrease in felsic fragments to less than 10%.	
9:27	9:23	0.67				180-		1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	(180') — less than 3% felsic fragments.	
								-		+	CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO .: GLA-5

PAGE:

JOB NO.: SITE LOCATION: GREGORY C DRILLING METHOD: DUAL-WALL CONTRACTOR: LAYNE - E LOGGED BY: T. REEDER

9539 GREGORY CANYON DUAL-WALL REVERSE, AIR LAYNE - ENVIRONMENTAL

E STARTED: 11/20/96 E FINISHED: 11/21/96 ELEVATION: 930 feet NORTHUS: ND DATE STARTED: DATE FINISHED:

GW DEPTH: 41 feet TOTAL DEPTH: 190 feet

EASTING: ND

				LEUER						EASTING: ND	
TIME START	TIME STOP	rate, Ft/Min	WATER Sample Interval	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL Symbol	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
9:27	9:47	0.50				185   190   195   200   215   220   225   230   240		\(\partial \partial \p		(180') — less than 3% felsic fragments.	Lost bit downhole.

#### BORING LOG

BORING NO.: GLA-7

PAGE: 1 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/21/96
DATE FINISHED: 11/21/96
ELEVATION: 403 feet
NORTHING: ND EASTING: ND

GW DEPTH: 50 feet TOTAL DEPTH: 160 feet

	LOC	SGED BY	': T. RE	EDER							EASTING: ND	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11/21 13:55						0			Newsperson	SM SW	COLLUVIUM: SILTY SAND, coarse—grained; contains fine gravel fragments. Yellowish brown (10YR5/7).	Damp.
						5- 				SW	SAND (DG?). Light yellowish brown (2.5YR6/4). May be boulder of decomposed leucogranodiorite.	
						10-			V		DECOMPOSED ROCK (TONALITE?): Olive (5Y5/3). Drills as a fine— to medium—grained sand. Oxidized fragments of brownish yellow (10YR6/8) quartz/	(10') — damp.
					adimararara'iriadistratificada	15			V V V V V V V V V V V V V V V V V V V		potassium feldspar.	
						20			V		TONALITE/DIORITE. Very dark gray (5Y3/1). Sub—angular to subrounded oxidized fragments.	
						25-			V< 7 V< 7		TONALITE. Gray (N5). Highly weathered and decomposed. Drills as an olive (5Y5/3), fine— to coarse—grained sand.	(25') — damp.
						30	12/	16/96	V > 7 V > 7			
						35-			V 2 V 2 7 V	× × ×		
						40-			V	1	(40') — color change to olive gray (5Y5/2 to 4/2).	
						45		-	V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7			
		***************************************				50-		<u> </u>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			(50') — groundwater encountered.
	***************************************					55-			\(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}			
11/22 8:25	14:20					60-			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	TONALITE. Olive (5Y4/3). Highly weathered. Drills as a fine— to coarse—grained sand. Large fragments are gray (N5).  CONTINUED ON NEXT PAGE	(60') — abundant water coming out of hole on 11/22/96.

# BORING LOG

BORING NO.: GLA-7

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/21/96
DATE FINISHED: 11/21/96
ELEVATION: 403 feet
NORTHING: ND EASTING: ND

GW DEPTH: 50 feet TOTAL DEPTH: 160 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	FEE	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGI FORMATION	DESCRIPTION	COMMENTS
8:25						60-		<del></del>	V	1	TONALITE. Olive (5Y4/3). Highly weathered. Drills as a fine— to coarse—grained sand. Large fragments are gray (N5).	(60') — abundant water coming out of hole on 11/22/96.
						65 <del>-</del>		-	7 V Z 7 V Z V Z V Z V Z V Z V Z V Z V Z	]	(65') — moderately weathered TONALITE.	(65') — dømp.
8:35	8:31	1.67				70-			7 V	l	(70') — color change to alive gray (5Y4/2). Lithic fragments are larger and appear less weathered.	(70') — moist.
						75~			V			
	:					80— 85—			V		(85') — approximately 35% of lithic	(85') — moist.
						90			ン V S T V S T V S T V S T V S T V S T V S T V S T V S T V S T T T T		fragments are of white (N8) quartz/feldspor dikes. TONALITE fragments are very dark gray (N3).	(65) — moist.
						95			V			
8:52	8:50	1.33				100			V	,	(100') — color of cuttings change to dark gray (N4). Lithic fragments of	(100') — wet.
						105-			(		TONALITE are very dark gray (N3); less than 5% felsic fragments. Slight weathering.	
				Very production of the control of th		110-			7 V 7 V V V V V V V V V V V V V V V V V			
:						115-			7 2 2 7 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		(115') — color of cuttings changes to very dark gray (N3). TONALITE fragments are very mafic with dark gray (N4)	
9:24	9:21	0.69				120-			V		plagioclase (borderline GABBRO). Slightly weathered. Tonalite fragments are black (N2.5).	(120') — abundant water in hole.

### BORING LOG

BORING NO.: GLA-7

PAGE: 3 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 11/21/96
DATE FINISHED: 11/21/96
ELEVATION: 403 feet
NORTHING: ND
EASTING: ND

GW DEPTH: 50 feet TOTAL DEPTH: 160 feet

	ш	ומ עשאי	: I. K	EUER							EASTING: ND	
TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	T T	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
	9:49	6.80	WATER SAMPLE SAMPLE INTERVA	SAMPLE SI INCHES	SAMPLE N	125— 135— 145— 155— 165—		1 ELEVATIO	VAT VAT VAT VAT VAT VAT VAT VAT VAT VAT		(140') — increase in felsics to 40% (probably derived from quartz/feldspar dikes in TONALITE).  GRANODIORITE. Gray (N6) with pale red (2.5YR7/2) orthoclase feldspars. Olive (5Y4/4) chlorite/epidote alteration of some clasts, particularly along fracture surfaces.  TONALITE. Dark gray (N4) with less than 5% felsic fragments.  GRANODIORITE. Gray (N6) with only rare pale red (2.5YR7/2) potassium feldspar.  Notes:  1. Total depth of borehole 160 feet. 2. Conductor casing set to 30 feet. 3. Open hole interval (exposed bedrock) between 30 and 160 feet below ground surface.	(120') — abundant water in hole.
THE PROPERTY OF THE PROPERTY O						-				***************************************	<ul> <li>4. Groundwater first encountered at 50 feet.</li> <li>5. Depth to water on 12/16/96 measured at 34.82 feet.</li> </ul>	

### BORING LOG

BORING NO.: GLA-8

PAGE: 1 OF

JOB NO.: SITE LOCATION: DRILLING METHOD: CONTRACTOR:

JOB NO.: 9539 LOCATION: GREGORY CANYON

ING METHOD: DUAL—WALL REVERSE, AIR CONTRACTOR: LAYNE — ENVIRONMENTAL LOGGED BY: M. VINCENT, CEG; T. REEDER DATE STARTED: 11/24/96 DATE FINISHED: 11/25/96

e finished: 11/25/9 Elevation: ND Northing: ND Easting: ND GW DEPTH: 61 feet TOTAL DEPTH: 300 feet

TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	<u> </u>	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11/24 9:20						5- 10- 20- 25- 30-					WEATHERED BEDROCK — TONALITE. Light yellowish brown (10YR6/4). Phaneritic with fine—crystallinity, amphibole—rich and biotite—rich. Some hydrothermal alteration to chlorite—epidote facies(6') — color change to light gray (10YR7/1)(10') — color change to gray (2.5Y6/1). Less oxidation of biotite than above. (24') — color change to gray (5Y6/1) to light olive gray (5Y6/2). increase in chlorite—epidote alteration products and minor increase in iron—oxide alteration products.	Conductor casing set to 15'. Begin drilling 5—inch diameter with downhole carbide button hammer.
11: <del>4</del> 5						40 45-			7 V		UNWEATHERED BEDROCK — TONALITE. Gray (5Y6/1). Phaneritic with fine—crystallinity, subhedral crystals, biotite and hornblende—rich. Pervasive, moderate to weak chlorite—epidote hydrothermal alteration.	
						50-			1	4	(53'-56') - color change to light	
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		A A A A A A A A A A A A A A A A A A A		brownish gray (2.5Y6/2). Increase in jointing/fracturing as evidenced by increase in oxidation products and weathered feldspar phenocrysts.						
						12	/16/9	5 <b>Y</b>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	CONTINUED ON MEYT DAGE	

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

CONTINUED ON NEXT PAGE

# BORING LOG

BORING NO.: GLA-8

PAGE: 2 OF

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JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: M. VINCENT, CEG; T. REEDER

DATE STARTED: 11/24/96
DATE FINISHED: 11/25/96
ELEVATION: ND
NORTHING: ND
EASTING: ND

GW DEPTH: 61 feet TOTAL DEPTH: 300 feet

12:08  12:25  12:25  12:25  13:26  14:25  15:26  15:26  15:26  16:26  16:26  16:26  17:26  16:26  17:26  17:26  18						r	,		_	(4.5		
12.08  12		TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
CONTINUED ON NEXT PAGE	12:53						70	 16/96 -	$\Delta t$ $V \Delta $	N. Y. T. S. Y. T. S. Y. T. N. Y. T. S.	brown (2.5Y6/3.5)(67'-78') — possible weathered joints as evidenced by alternating zones of light yellowish brown (10YR6/4) weathered rock and greenish gray (10BG5/1) unweathered rock. Contains fragments of dark gray (N4) to greenish gray (10BG5/1), micaceous and amphibole—rich TONALITE with fine— to medium—crystallinity phenocrysts of weak red (10R4/3) feldspar(78') — color change to greenish gray (5BG5/1)(81'-86') — TONALITE to GRANODIORITE. Phaneritic with medium crystallinity; subhedral to euhedral, white to light red (2.5YR6.5/8) potassium feldspar phenocrysts. Minor amounts of white to light red (2.5YR6.5/8) 1/32—inch thick mineral vein infilling (zeolite?) on some fracture surfaces. Mineral veins show some reaction with the host rock, as evidenced by epidote alteration envelopes(86') — groundwater encountered in weathered fracture zone. Weathered rock is pale olive (5Y6/3) in color(98') — decrease in amount of weathered fracture zones. Abundant healed fractures showing shear structures in possible hydrothermal (zeolite) mineral veins approximately 1/2—inch thick.	(83') — larger pieces of sample expelled from the cyclone(85') — stop at 12:28 to trip rods out of hole to repair downhole hammer(86') — groundwater encountered. Mineral vein materials do not appear to react to weak HCl solution(90') — very dry(100'—105') — somewhat abundant groundwater.

# BORING LOG

BORING NO .: GLA-8

PAGE: 3 OF

DATE STARTED: 11/24/96
DATE FINISHED: 11/25/96
ELEVATION: ND
NORTHING: ND

61 feet 300 feet GW DEPTH: TOTAL DEPTH:

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL.—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: M. VINCENT, CEG; T. REEDER

EASTING: ND

			· · · · · ·								Expline: No	
TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	100	ELEVATION IN FEET	MATERIAL Symbol	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
	13:45		WATER SAMPLE INTERVAL	SAMPLE SIZI	SAMPLE NO	125 130 135 140 155 160			AND THE AND TH		(128') — increase in mafic minerals with associated color change to brownish gray (1085/1)(135'-140') — healed fractures showing shear structures in possible hydrothermal (zeolite) mineral veins approximately 1/2—inch thick. Veins contain 1/32—inch to 1/16—inch diameter TONALITE fragments as inclusions. Vein materials are typically greenish gray (5866/1) in color with less than 1/64—inch thick iron—oxide and pyrolusite coatings between the vein material and the host—rock(143') — abundant olive gray to light red (2.5YR5/8), euhedral feldspar phenocrysts. A weak foliation is evidenced by the partial segregation of mafic and felsic minerals and by the preferred orientation of platy feldspar and biotite phenocrysts. No visible signs of mineral veining on fracture surfaces(150') — minor occurrence of mineral veining along fracture surfaces, along with non—mineralized fractures(160') — same as above.	
16:01 16:10		1.43				170		<u>.</u>			(169') — decrease in the amount of feldspar phenocrysts with light red (2.5YR5/8) coloration. Most phenocrysts are white(172') — increase in amount of mineral veining with associated increase in chloritization. Possible fracture zone.	
						180			ドント レント レント くっ VVァ VVァ 人 ~ V ^ V ^ V ^ ~ ~		(177') — most feldspar phenocrysts are colored light red (2.5YR5/8)(180'-185') — decrease in light red colored feldspar phenocrysts and increase in white colored feldspar.  CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-8

PAGE: 4 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: M. VINCENT, CEG; T. REEDER

DATE STARTED: 11/24/96 DATE FINISHED: 11/25/96

ELEVATION: ND NORTHING: ND EASTING: ND

GW DEPTH: 61 feet TOTAL DEPTH: 300 feet

		70CD D1	. 1714 11	INCLIAL)	0E01 11	11000	 			DASTING: NO	
TIME START	TIME STOP	rate, FT/Min	Water Sample Interval	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						185	-	<u>************************************</u>	•	(180'-185') — decrease in light red colored feldspar phenocrysts and increase in white colored feldspar. (190') — same as above. (195') — same as above.	
						205	-	A		TONALITE — dark gray (N4), weathered, with some epidote alteration of feldspar, quartz and granodiorite veins.  CONTACT ZONE: mixed TONALITE and	(205') — wet.
		The Application of the Control of th				210-	-			LEUCOGRANODIORITE — mineralogy includes: greenish gray (5G6/1), altered plagioclase; pale red (2.5YR7/2) to light red (2.5YR7/6) orthoclase; white (N8) quartz and plagioclase; dark gray (N4) to dark greenish gray (5GY4/1) mafics (pyroxene, hornblende and biotite). Quartz—filled veins in some of the cuttings.	
		The state of the s				225			X X X	(215') — increase to 80% of cuttings of LEUCOGRANODIORITE with potassium—feldspar and some mafics(220') — equal proportions in cuttings of greenish gray (5G6/1) TONALITE(?) to pale red (2.5YR7/2) LEUCOGRANODIORITE(225') — mix of dark gray (N4) TONALITE and light red (2.5YR7/2) LEUCOGRANODIORITE.	
	THE THE PARTY OF T		Supply Andreas and			230-		レコーレユーレン T レス T V A Z Y A Z Y A Z Y A Z Y A Z Y A Z Y		(230') — approximately 70% greenish gray (5G6/1), altered TONALITE and 30% pale red (2.5YR7/2) GRANODIORITE. (235') — cuttings become darker due to	
11/25 8:14						240-		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		increase in dark gray (N4) mafics(240') — TONALITE is dark gray (N4) with greenish gray (5G6/1), altered plagioclase and dark gray (N4) mafics. Decrease in potassium—feldspar/LEUCOGRANODIORITE fragments to less than 15%.  CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-8

PAGE: 5 OF

5

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL LOGGED BY: M. VINCENT, CEG; T. REEDER DATE STARTED: 11/24/96
DATE FINISHED: 11/25/96
ELEVATION: ND
NORTHING: ND
EASTING: ND

GW DEPTH: 61 feet TOTAL DEPTH: 300 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
1/25 8:14						240		マングラ マク	3	(240') — TONALITE is dark gray (N4) with greenish gray (566/1), altered plagioclase and dark gray (N4) mafics. Decrease in potassium—feldspar/LEUCOGRANODIORITE	
			Average and a second control of the second c			245		1		fragments to less than 15%. (245') — increase in LEUCOGRANODIORITE fragments to about 30%; color intensifies to light red (2.5Y7/6).	
			AFFECT AND AND AND AND AND AND AND AND AND AND			250		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		(250') — TONÁLITE color becomes lighter — gray (N5). Less than 5% LEUCOGRANODIORITE fragments.	
						255		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(255') — same as above, with minor greenish gray (5G6/1 to 5G86/1), altered (chloritized?) plagioclase.	
8:38	8:35	0.95				260		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(260') — approximately 10% LEUCOGRANODIORITE fragments.  TONALITE/GRANODIORITE — gray (N5) to dark gray (N4), with some greenish gray (566/1), altered (chloritized?) plagioclase,	
						265		V		and LEUCOGRANODIORITE dikes with less than 2% pale red (2.5YR7/2) to light red (2.5YR7/6) orthoclase.	
			minutes are surrect to the control of the control o			270		Δ V V X Y	75.4	(265') — mix of LEUCOGRANODIORITE and GRANODIORITE cuttings. Some greenish gray (5G6/1) altered plagioclase.	
			:			275		V	3	(275') — same as above.	
8:58	8:54	1.25				280-		V	2	(280') — orthoclase feldspar/	
,,,,,						285		N	1	leucogranodiorite fragments decrease to less than 5%(285') — increase in LEUCOGRANODIORITE	
						200		V	4	fragments to approximately 35%.	
						290		7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V	4	(300') — decrease in orthoclase feldspar to approximately 15%; increase in greenish gray (5G6/1), altered plagioclase. NOTES:	
						295-		7 7 7 7	4 /	1. Total depth of borehole 300 feet. 2. Conductor casing set to 15 feet. 3. Open hole interval (exposed bedrock) between 15 and 300 feet below ground	
	9:17	1.05				300			***************************************	surface. 4. Groundwater first encountered at 86 feet. 5. Depth to water on 12/16/96 measured at 62.40 feet.	

# BORING LOG

BORING NO.: GLA-9

PAGE: 1 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE - ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 12/05/96
DATE FINISHED: 12/07/96
ELEVATION: ND
NORTHING: ND
EASTING: ND

GW DEPTH: Not encountered TOTAL DEPTH: 300 feet

TIME	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZI INCHES	SAMPLE NO.	DEPTH IN	766.	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOG FORMATION	DESCRIPTION	COMMENTS
						5-		•	>		DECOMPOSED TONALITE. Olive gray (5Y4/2). Highly weathered and decomposed. Drills as a fine—grained sand to silty sand with coarse—grained sand to fine—grained gravel size fragments.	Drilling on cut — all topsoil removed. Damp.
						15—					LEUCOGRANODIORITE DIKE. Light yellowish brown (2.5Y6/4) to pale yellow (2.5Y7/4). Highly weathered and decomposed. Fe-oxide staining, and oxidation and chloritization of mafics.	Damp.
THE THE PARTY OF T						25- 30-			~		TONALITE. Dark gray (5Y4/1) to very dark gray (5Y3/1). Moderately weathered. Minor Fe—oxide staining; some chloritization of mafics.	Damp.
14:00						35 <del>-</del>			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		(35') — quartz veins in TONALITE.  GRANODIORITE dike in TONALITE (about 60% GRANODIORITE). Light gray (2.5Y7/2) to pale yellow (2.57/3). Oxidized; weathered; some epidote alteration of feldspar and chloritization of mafics.  DIORITE/TONALITE. Black (N2.5) to very dark	
						<b>4</b> 5-			V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7		gray (N3). Slightly to moderately weathered. Altered biotite on some fragments; minor epidote alteration of some feldspars. Cuttings include fragments of GRANODIORITE; oxidized with some epidote and chlorite alteration(50') — very minor quartz/feldspar	
	14:20	1				55 60			7 2 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7		fragments in cuttings.  GRANODIORITE dike in TONALITE. White (N8) and block (N2.5) mafics. Approximately 30% GRANODIORITE and 70% TONALITE.  DIORITE/TONALITE. Very dark gray (N3) to black (N2.5) with GRANODIORITE fragments in cuttings. Slightly weathered to fresh.  Zeolite(?) and chlorite as fracture infillings;	
14:22									ν \ ν < Λ	1	minor disseminated pyrite in veins and in host rock at contact.  CONTINUED ON NEXT PAGE conditions encountered and applies only at the	

# BORING LOG

BORING NO.: GLA-9

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 12/05/96
DATE FINISHED: 12/07/96
ELEVATION: ND
NORTHING: ND

GW DEPTH: Not encountered TOTAL DEPTH: 300 feet

TOR:	LAYNE - ENVIRONMENTAL	NORTHING:	
BY:	T. REEDER	EASTING:	ND

	LV.	ום עשעע	r: T. Ri	LEDEN						EASTING: ND	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
14:46 15:24	14:43	0.95	WA SAW	TI DNI	HMVS	60   65   65   65   65   65   65   65	ELEW IN F			DIORITE/TONALITE. Very dark gray (N3) to black (N2.5) with GRANODIORITE fragments in cuttings. Slightly weathered to fresh. Zeolite(?) and chlorite as fracture infillings; minor disseminated pyrite in veins and in host rock.  DIORITE. Very dark gray (N3) to black (N2.5). Slightly weathered to fresh; minor chloritization. No quartz/feldspar fragments.  DIORITE. Very dark gray (N3) to black (N2.5) with minor quartz/feldspar veins with some zeolite(?) alteration/infillings along fractures and chloritization.	(65') — damp to dry. Hard drilling. (85'-90') — very hard drilling. Broke tooth off bit.
						110					
						120	-			CANTILLIES AN MEUT ALAF	
	l	j	L		1	L				CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-9

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
TOCATED TO TOTAL

DATE STARTED: 12/05/96
DATE FINISHED: 12/07/96
ELEVATION: ND
NORTHING: ND

GW DEPTH: TOTAL DEPTH: Not encountered 300 feet

			,	변	o i		<del>-</del>		႘ᅩ		
TIME START	TIME STOP	rate, FT/Min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOC FORMATION	DESCRIPTION	COMMENTS
14:22						65		V		DIORITE/TONALITE. Very dark gray (N3) to black (N2.5) with GRANODIORITE fragments in cuttings. Slightly weathered to fresh. Zeolite(?) and chlorite as fracture infillings; minor disseminated pyrite in veins and in host rock.  DIORITE. Very dark gray (N3) to black (N2.5). Slightly weathered to fresh; minor	(65') — damp to dry. Hard drilling.
						75		31 V		(N2.5). Slightly weathered to fresh; minor chloritization. No quartz/feldspar fragments.	
14:46	14:43	0.95				80		レコーレコーレコーレコー ママ ア Vマ Vマ Vマ スペース 4 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			(85'-90') - very hard
						90	-	レン・レン・レン・レン・レン V C フ V C フ V C フ V C フ V C フ V C フ V C フ V C フ V C			drilling. Bróke tooth off bit.
15:24	15:19	0.61				100		1		DIORITE. Very dark gray (N3) to black (N2.5) with minor quartz/feldspar veins with some zeolite(?) alteration/infillings along fractures and chloritization.	
						110-	<del>-</del>	V		fractures and chloritization.	
						115		\(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\fraca	in the second se		
						120	_	1 V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		CONTINUED ON NEXT PAGE.	

### BORING LOG

BORING NO.: GLA-9

PAGE: 3 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T. REEDER

DATE STARTED: 12/05/96 DATE FINISHED: 12/07/96 ELEVATION: ND NORTHING: ND

GW DEPTH: Not encountered TOTAL DEPTH: 300 feet

EASTING: ND

	LOX	SYFT) BJ	r: T. RE	FUFK							EASTING: ND	
TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	1 1 1	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
16:02	15:58	0.59				125-			\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		(125') — no apparent quartz/feldspar dikes.  DIORITE. Very dark gray (N3) to black (N2.5). Fresh; hard. Quartz/feldspar fragments with altered biotite and some epidote alteration of feldspars. Very minor	Rock is fractured, but very hard — breaking buttons off bit. Dry.
12/06 8:20						140-			V		disseminated pyrite. (135') — no apparent quartz/feldspar fragments.	
		<b>\$</b>				150-			1 V 1 1 V 2 1 V 2 7 V 2		DIORITE. Very dark gray (N3) to black (N2.5). Fresh; very hard; mostly unaltered. Very minor quartz/feldspar fragments with some chloritized biotite.	
	8:46	0.77				165-			V A V A V A V A A A V A A A V A A A V A A A V A A A V A A A V A A A V A A A V A A A V A A A A V A A A V A			
9:20			Annotation 1	AND THE PROPERTY OF THE PROPER		175-			レンイ レンイ レンイ レンイ レンイ レン		(175') — DIORITE with GRANODIORITE/ TONALITE dikes. Chlorite alteration, especially along contact of dikes with DIORITE.  Altered GRANODIORITE and quartz/feldspar dikes in TONALITE. Greenish gray (505/1). Chloritization of some fractures, and thin coatings of zeolite(?) along some fracture	Dry.
									47 A7		surfaces.  CONTINUED ON NEXT PAGE	

## BORING LOG

BORING NO.: GLA-9

PAGE: 4 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: T, REEDER

DATE STARTED: 12/05/96
DATE FINISHED: 12/07/96
ELEVATION: ND
NORTHING: ND

GW DEPTH: Not encountered TOTAL DEPTH: 300 feet

EASTING: ND

	LUX	WED BI	: 1, 10	LEDEK	,						EASTING: ND	
TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN	- - - -	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
9:20						185			V		Altered GRANODIORITE and quartz/feldspar dikes in TONALITE. Greenish gray (5G5/1). Chloritization of some fractures, and thin coatings of zeolite(?) along some fracture surfaces(185') — TONALITE without felsic fragments.	Dry.
						190			2 1 V 2 1 V 3 1 V V V V V V V V V V V V V V V V		(190') — more mafic — DIORITE(195') — minor quartz/feldspar fragments	
10:22	9:46	0.77				200			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		in cuttings(200') — DIORITE/TONALITE. Dark gray (N4); increase in felsic fragments in cuttings.	Wait 20 minutes for water. No water.
						205			1 V 1 V 1 V 1 V 1 V 1 V 2 V 2 V 2 V 2 V		·	
						215			1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V		(210') — minor quartz/feldspar fragments in cuttings. (215') — some chloritized fragments — look like fracture coatings; very dark gray	
10:51	10:47	0.80				220-			1 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V		(N3).  TONALITE/DIORITE. Very dark gray (N3). Hard; fresh. Very minor granodiorite fragments with some disseminated pyrite(?).	
						230-		<del> -</del> 	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(225') — some chloritized fragments, dark greenish gray (5G4/1 to 5BG4/1)(230') — DIORITE. Dark gray (N4) to gray	
						235-		The state of the s	V		(N5). Less mafics.	
11:20	11:15	0.83				240			1 V		CONTINUED ON NEXT PAGE.	

# BORING LOG

BORING NO .: GLA-9

PAGE: 5 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: TYPE-PEP

DATE STARTED: 12/05/96
DATE FINISHED: 12/07/96
ELEVATION: ND
NORTHING: ND

GW DEPTH: Not encountered TOTAL DEPTH: 300 feet

TIME	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN	FI FVATION	IN FEET	SYMBOL	FORMATION	DESCRIPTION	COMMENTS
11:20				-		245		*	V			
4:27	11:35	0.67				250-		الح	< 7 < 7 < 7 < 7 < 7 < 7 < 7 < 7 < 7 < 7		(250') — cuttings are very dark gray (N3) to gray (N4); minor quartz/feldspar fragments.	Changing bit. Fuel up. L hole sit over one hour - end of sounder is moist
						255		71 77 77	<pre>&lt;</pre>		(255') — DIORITE with no apparent quartz/feldspar dikes. More mafic; darker.	but no free water in hole.
4:53	14:48	0.48				265-		1 1 2	V			
						270-		<u> </u>	7 V 7 V 7 V X Y X		(270') — very minor quartz/feldspar fragments in cuttings.	
						275			7 2 7 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
2/07 8:30	15:50	0.35				280		1	V			Change bit.
				-		290-		* V A   V A	7 2 7 2 7 2 7 4 7 4 7 4 7 4	,	TONALITE. Minor quartz/feldspar dikes with chloritized mafics along contact with TONALITE.  TONALITE/GABBRO. Very dark gray (N3).	About 0.5" of water at bottom of hole on 12/0 (condensation?).  Used up 4 bits (last on
						295		\ \ \ \ \	V Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z		Fresh; hard; tight. Minor quartz/feldspar dikes. Minor chloritization of some mafics.	only made it 20 feet) - too many carbide fragments in hole. Rubb fitting on bit broke.
	8:57	0.74				300		- 1.	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		NOTES:  1. Total depth of borehole 300 feet. 2. Conductor casing set to 30 feet. 3. Open hole interval (exposed bedrock) between 20 and 300 feet below ground surface.	

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

#### BORING LOG

BORING NO .: GLA-10

PAGE: 1 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL—WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL LOGGED BY: M. VINCENT, CEG / T. REEDER DATE STARTED: 12/03/96
DATE FINISHED: 12/05/96
ELEVATION: 325 feet
NORTHING: ND EASTING: ND

GW DEPTH: 33 feet TOTAL DEPTH: 150 feet

TIME START	TIME STOP	rate, ft/min	WATER SAMPLE INTERVAL	SAMPLE SIZE INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
2/03 11:57						5-		Salana salana ke Kebana sa	SW SM	ALLUVIUM: SAND to SILTY SAND — very fine— to medium—grained with minor coarse sand to pebbles, with boulders of granodiorite and lesser amounts of tonalite. SAND is poorly sorted, micaceous and feldspathic. Dark brown (7.5YR3/3.5).	Dry to damp.
						15				(10'-20') — gradational color change to pinkish gray to brown (7.5YR5/2) with associated decrease in silt and micaceous minerals.	(10') — dry to damp(15') — dry to damp(17') — groundwater
12:35	12:16	1.32				25	12/16/96		SW	GRAVELLY SAND — poorly sorted, medium— to very coarse—grained, arkosic. Abundant subrounded to sub—angulor, tonalitic and granodioritic GRAVEL to BOULDERS.	encountered(25') - stop drilling to repair rig at 12:16. Star drilling again at 12:35.
						35		7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2	4	WEATHERED BEDROCK — TONALITE: Dark gray (2.5Y4/1) to dark grayish brown (2.5Y4/2). Phaneritic with fine— to medium— crystallinity. Biotite— and hornblende—rich. Weakly weathered with moderate to strong oxidation of biotite and	(33') — wet.
						45		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		hornblende to strong oxidation of blotte and hornblende to chlorite, and with minor alteration of feldspar crystals to clay. (45'-50') - predominantly fine-crystallinity.	(40') — wet. (45') — damp.
						55		V		(53') — color change to olive gray (5Y5/2).	(50') — moist to dry. Set conductor casing to 50' below ground surfac (55') — dry.
						60		V ^ V ^ V ^ V ^ V ^ V ^ V ^ V ^ V ^ V ^	7	CONTINUED ON NEXT PAGE	

# BORING LOG

BORING NO.: GLA-10

PAGE: 2 OF

JOB NO.: 9539
SITE LOCATION: GREGORY CANYON
DRILLING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOCGED BY: M. VINCENT, CEG / T. REEDER

DATE STARTED: 12/03/96
DATE FINISHED: 12/05/98
ELEVATION: 325 feet
NORTHING: ND
EASTING: ND

GW DEPTH: 33 feet TOTAL DEPTH: 150 feet

TIME START	TIME STOP	rate, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						65-		1		(62') — color change to dark greenish gray (10Y4/1).	(60') – dry.
						70		V	dring difference and the state of the state	(70') — color change to pale olive to olive (5Y5.5/3)(73') — color change to greenish gray (5GY5.5/1).	
12/05 8:54	13:04					80		1 V 2 T V 2	X	(77') color change to gray (N5).	(80') — stop drilling to set conductor casing to 50' below ground surface.
						90		レンフ V マ V マ V マ V ス V V A V A V A V A V A V A		TONALITE/DIORITE. Very dark gray (N3). Weathered and moderately decomposed. Fe— oxide stained with altered mica and/or pyrite on oxidized pieces; chloritization of some mafics. GRANODIORITE dikes in TONALITE. White (N8). Contains black (N2.5) mafic minerals (biotite, hornblende and pyroxene). Very	(8/') — water production   from borehole while drilling   approximately 5-6 gpm.
9:27	9:25	0.65				95-		7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V 7 V		slight chloritization of some mafics (pyroxene) in very dark gray (N3), weathered and moderately decomposed TONALITE(95') — less than 10% GRANODIORITE dike fragments in TONALITE.	
3.4.1						105		7 V		(100') - 40% GRANODIORITE in TONALITE. (105') - dark gray (N4) mixed TONALITE and GRANODIORITE.	Moist.
						110		×		Gray (N5 to N6) GRANODIORITE.	
10:05	10:02	0.57				120		ニケニケニケニケニケニケニケニケニケニケニケニケニケニケニケー		Gray (N5 to N6) GRANODIORITE/TONALITE. (120') - same as above.  CONTINUED ON NEXT PAGE	(115') — wet. Wet.

# BORING LOG

BORING NO .: GLA-10

PAGE: 3

SITE LOCATION: DRILLING METHOD: CONTRACTOR:

JOB NO.: 9539
TE LOCATION: GREGORY CANYON
ING METHOD: DUAL-WALL REVERSE, AIR
CONTRACTOR: LAYNE — ENVIRONMENTAL
LOGGED BY: M. VINCENT, CEG / T. REEDER

12/03/96 12/05/96 325 feet ND DATE STARTED: DATE FINISHED: ELEVATION: **NORTHING:** EASTING: ND

GW DEPTH: 33 feet TOTAL DEPTH: 150 feet

	EU.	KICU DI	i: M. Y	moeni,	CEG /	I. NEEDEN	•		EASTING: NO	
TIME START	TIME STOP	RATE, FT/MIN	WATER SAMPLE INTERVAL	SAMPLE SIZE, INCHES	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	SYMBOL SYMBOL USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
10:05						120			(120') - same as above.	Wet.
						125			(125') — less than 5% orthoclase feldspar.	
			and other desired desi			130	1 1	7 VA 2 VA 2 VA 2 VA 2 VA 2 VA 2 VA 2 VA	(130') — no potassium—feldspar; less than 5% GRANODIORITE dikes in TONALITE.	
	10:44	0.51				135	) 1 	V	(135') — increase in GRANODIORITE to approximately 50% of cuttings; moderately weathered, with minor pink potassium—feldspar.	
10:47	10,44	. 0.01				140	1	V	(140') — moderately weathered TONALITE with GRANODIORITE dikes.	
	11:06	ለፍ፣	A STATE OF THE STA			145		7 4 7 4 7 4 7 4 7 4	Gray (N6), moderately weathered TONALITE/ GRANODIORITE with some epidote/chlorite alteration.	(145') — wet.
	31,00	0.33				150		< ^ >	(150') — less than 1% epidote or zeolite alteration and fracture infillings.  Notes:	
						155			Total depth of borehole 150 feet.     Conductor casing set to 50 feet.     Open hole interval (exposed bedrock) between 50 and 150 feet below ground	
									surface. 4. Groundwater first encountered at 33 feet. 5. Depth to water on 12/16/96 measured at 22.20 feet.	
	***************************************									

BORING NO .:

GLA-11

PAGE: 1 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON LANDFILL
DRILLING METHOD: AIR ROTARY
CONTRACTOR: WATER DEVELOPMENT CORPORATION

DATE STARTED: 11/30/99
DATE FINISHED: 11/30/99
ELEVATION: 775.22
NORTHING: 2070002.607

GW DEPTH: 231 feet TOTAL DEPTH: 243 feet

ПМЕ	DRY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	-	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
8:20 8:42 8:46		M No.	900)	MAS (1)	SAW	30- 10- 15- 20- 25- 30- 40- 45-		713		SM SM/	SOIL: Strong brown (7.5YR5/6) SILTY SAND to SANDY SILT with CLAY. SAND is fine— to medium—grained and moderately graded.  WEATHERED BEDROCK: Olive gray (5Y5/2), phaneritic, fine—grained, moderately weathered and oxidized HORNFELS. (28') — color grades to gray 5Y5/1.	Dry.
	6					50-					UNWEATHERED BEDROCK: Dark groy (N4), phaneritic, fine-groined, subhedral, hornblend rich HORNFELS, CONTINUED ON NEXT PAGE	Dry.

BORING NO.:

**GLA-11** 

PAGE: 2 OF

JOB NO.: 9539

GW DEPTH: 231 feet TOTAL DEPTH: 243 feet

SITE LOCATION: GREGORY CANYON LANDFILL DRILLING METHOD: AIR ROTARY CONTRACTOR: WATER DEVELOPMENT CORPORATION LOGGED BY: W. LOPEZ, CEG

DATE STARTED: 11/30/99 DATE FINISHED: 11/30/99 ELEVATION: 775.22 NORTHING: 2070002.607 EASTING: 6300855.954

TIME	ORY DENSITY (LBS/CU. FT.)	MOISTURE (%)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	-	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						50					UNWEATHERED BEDROCK: Dark gray (N4), phaneritic, fine—grained, subhedral, hornblend rich HORNFELS.	Dry.
						55		-			,	
						60						
9:25 9:29						65		_				
						70-		-			(70'-80') - moderately weathered.	
						75		<b></b>				
						80		<b></b>			·	
9:50 9:55						85-		_				
						90		-				
						95		_			Strong brown (7.5YR5/8) to white (7.5YR8/1),	Dry.
						100		_			phoneritic, fine— to coarse—grained, moderately weathered, subhedral to euhedral GRANODIORITE dikes in HORNFELS with potassium feldspar phenocrysts.  CONTINUED ON NEXT PAGE	

BORING NO.:

GLA-11

PAGE: 3 OF

JOB NO.:

SITE LOCATION: GREGORY CANYON LANDFILL.
DRILLING METHOD: AIR ROTARY
CONTRACTOR: WATER DEVELOPMENT CORPORATION
LOGGED BY: W. LOPEZ, CEG

DATE STARTED: 11/30/99 DATE FINISHED: 11/30/99 ELEVATION: 775.22

NORTHING: 2070002.607 EASTING: 6300855.954

GW DEPTH: 231 feet TOTAL DEPTH: 243 feet

TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (寒)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	-	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
10:22						105					Strong brown (7.5YR5/8) to white (7.5YR8/1), phaneritic, fine— to coarse—grained, moderately weathered, subhedral to euhedral GRANODIORITE dikes in HORNFELS with potassium feldspar phenocrysts.	Dry.
<b>5.2</b> 5		POPPER TO THE PO		A CONTRACTOR OF THE PROPERTY O		110		<del></del>			HORNFELS with minor GRANODIORITE dikes.	Dry.
						115-		_		delivature		
11:00		Parason - Adjumpto				125-		_				
1:05						130-		-	· · · · · · · · · · · · · · · · · · ·			
				ALLES TO THE TAXABLE PROPERTY OF TAXABLE PROPERTY OF TAXABLE PROPERTY		135-				***************************************		
						140					(141'144') - GRANODIORITE dike.	
11:37 11:45						145-					(150') prodominanthy motion with the disease	Dou
											(150') — predominantly matic with no dikes.  CONTINUED ON NEXT PAGE conditions encountered and applies only at the	Dry.

BORING NO.:

GLA-11

PAGE: 4 OF

GW DEPTH: 231 feet

TOTAL DEPTH: 243 feet

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON LANDFILL

DRILLING METHOD: AIR ROTARY
CONTRACTOR: WATER DEVELOPMENT CORPORATION LOGGED BY: W. LOPEZ, CEG

DATE STARTED: 11/30/99 DATE FINISHED: 11/30/99 ELEVATION: 775.22 NORTHING: 2070002.607 EASTING: 6300855.954

TIME	ORY DENSITY (LBS/cu. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	ELEVATION	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
·						150				(150') - predominantly mafic with no dikes.	Dry.
						155					
						135					
						160-					
											uscature a di accordo
											esa minyoponanana
2:22		ļ				165					
2:26						-					v
						170-					Day
											Dry.
						175					<u></u>
					,						
						400					-
						180					
3:04						185-					
3:10			<del>-  </del>								pusas a recoverante de la constante de la cons
	:									(189'-191') - GRANODIORITE dike.	1
						190-				(103 - 131 ) - GIMNOSIONIE GIKE.	
						100					
						195					
										*	
						200					Dry.
							Wahiri-i-				
		1		<u> </u>						CONTINUED ON NEXT PAGE conditions encountered and applies only at th at other locations and may change with the	

BORING NO.:

GLA-11

PAGE: 5 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON LANDFILL

GW DEPTH: 231 feet TOTAL DEPTH: 243 feet

DRILLING METHOD:
CONTRACTOR:
LOGGED BY:
WATER DEVELOPMENT CORPORATION
W. LOPEZ, CEG

DATE STARTED: 11/30/99 DATE FINISHED: 11/30/99 ELEVATION: 775.22 NORTHING: 2070002.607 EASTING: 6300855.954

TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	125	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
	-					200-		<b>-</b>	-		same as above.	Dry.
3:47 3:51						205		-				
0.01		\$				210		_				
						215		_				
						220		_				Woit 30 minutes. Obstruction encountered 158'. Tape is wet at 75'
4:28 5:03						225		_				Free groundwater encountered when drilling resumed.
						230		¥				
						235-						
5:27	•					240-						Blow out water. Wait 10 minutes; borehole still produces water.
		***************************************				245-		-			Notes:  1. Total depth of boring 243 feet. 2. Groundwater first encountered at 231 feet. 3. Monitoring well constructed on 12/2/99	
						250-					(see Monitoring Well Completion Summary).	

BORING NO.:

GLA-12

PAGE: 1 OF

JOB NO.: SITE LOCATION: DRILLING METHOD:

9539 GREGORY CANYON LANDFILL

GW DEPTH: 36.7 feet TOTAL DEPTH: 66.0 feet

CONTRACTOR:

AIR ROTARY WATER DEVELOPMENT CORPORATION W. LOPEZ, CEG DATE STARTED: 11/24/99
DATE FINISHED: 11/24/99
ELEVATION: 343.91
NORTHING: 2070784.338 FASTING: 6299410.816

	LO	OPEZ, C	EG		EASTING: 6299410.816								
TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN		ELEVATION IN FEET	MATERIAL Symbol	USCS/GEOLOGIC FORWATION	DESCRIPTION	COMMENTS	
8:16						0			\$65.000	SM/ ML	SOIL: Strong brown (7.5YR4/6) SILTY SAND to SANDY SILT with CLAY. SAND is fine—grained and poorly graded.	Dry.	
						5					WEATHERED BEDROCK: Strong brown (7.5YR4/4), fine—grained GRANODIORITE (GRUSS) weathered with iron— oxide staining and alteration of feldspar	Damp.	
						10-		<del></del>			crystals to clay.		
						15					Yellowish brown (10YR5/4) to brownish yellow	Damp.	
8:38 8:57						20-		<b></b>		Lacate annual an	(10YR6/6), phoneritic, fine— to medium— grained, moderately weathered and oxidized GRANODIORITE.	Switched from tri-cone bit to downhole hammer. Conductor casing set to 18'.	
		111111111111111111111111111111111111111				25				- The state of the	(23') — gradational color change to pole yellow (5Y7/3).		
						30-					UNWEATHERED BEDROCK:	Moist.	
						35			Constant of the Constant of th		Pole yellow (5Y7/3), phoneritic, fine to coarse subhedral to euhedral GRANODIORITE with white to light red (2.5YR7/6) potassium feldspor phenocrysts.	•	
								<u>조</u>					
9:30 10:18		-				40		-				Wait 45 minutes. Sound for water. Groundwater encountered at 38 feet.	
			- Anthropology	- Control of the Cont		45						Very moist.	
					•	50-					(48') — color change to light olive brown (2.5Y4/3). some as above.	Very moist.	
Ti	ne data	Drese	nted on	this I	og is o	simoli	ficati	on c	of ac	tual	CONTINUED ON NEXT PAGE conditions encountered and applies only at th	e location of this boring	
a	nd at t	he time	e of dr	illing.	Subsurfa	ce cor	ıdilio	ns n	nay (	differ	at other locations and may change with the	passage of time.	

BORING NO.:

GLA-12

PAGE: 2 OF

GW DEPTH: 36.7 feet

TOTAL DEPTH: 66.0 feet

JOB NO.: SITE LOCATION: DRILLING METHOD: CONTRACTOR:

9539

GREGORY CANYON LANDFILL

AIR ROTARY
WATER DEVELOPMENT CORPORATION

DATE STARTED: 11/24/99
DATE FINISHED: 11/24/99
ELEVATION: 343.91
NORTHING: 2070784.338

TIME	ORY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	ELEVATION	IN FEET MATERIAL	SYMBOL USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						55		And the second s		same as above.	Wait 2 hours. Sound for water. Groundwater sound
0:38						70-				Notes:  1. Total depth of boring 66 feet. 2. Groundwater first encountered at 38 feet. Static water level measured at 36.7 feet. 3. Monitoring well constructed on 11/24/99 (see Monitoring Well Completion Summary).	at 36.7 feet.
			**************************************		rus au construir de construir d	80					
	The state of the s	Advisor representation of the control of the contro	A STANDARD TO THE STANDARD TO			90					
			And Andrews	THE PARTY OF THE P		95-					
				ANALOS SE SE SE SE SE SE SE SE SE SE SE SE SE		100					

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

BORING NO.: GLA-13

PAGE: 1 OF 2

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON LANDFILL
DRILLING METHOD: AIR ROTARY
CONTRACTOR: WATER DEVELOPMENT CORPORATION

DATE STARTED: 11/22/99
DATE FINISHED: 11/23/99
ELEVATION: 355.90
NORTHING: 2000010.000

GW DEPTH: 49.7 feet TOTAL DEPTH: 69.5 feet

				OPEZ, (	<del></del>					8_	EASTING: 6298912.906	
TIME	DRY DENSIT (LBS/CU. FT	MOISTURE (☎)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO	DEPTH IN	reci	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
15:00						0			100 MAN 200	SM/ ML	SOIL: Light yellowish brown (10YR6/4) SILTY SAND to SANDY SILT. SAND is fine—grained and poorly groded.	Dry.
						5-		<b>-</b>			WEATHERED BEDROCK: Strong brown (7.5YR5/8 to 7.5YR4/6), fine- grained TONALITE (GRUSS). Weathered with Fe- oxide staining and alteration of feldspar crystals to clay.	Domp.
						10-		_				
						15-		-				
15:17 15:26						20-		<del>-</del>				Switched from tri-cone to button bit.
						25					Olive (5Y5/3) to olive gray (5Y5/2), phaneritic, hornblend— and quartz—rich fine— to coarse—grained TONALITE with strong oxidation of hornblend and biotite phenocrysts.	Domp,
		***************************************				30-		-			(30') — color grades to gray (5Y6/1).	
						35-		_				
15:43 15:46						40-		-		DOMAN TO THE TOTAL THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TO		
		:				45-		-			UNWEATHERED BEDROCK:	Domp. Moist.
						50-		<u>*</u>			Dark gray (5Y4/1) to white (5Y8/1), phaneritic, fine— to coarse—grained TONALITE to GRANODIORITE with abundant felsic minerals with lesser mafic minerals. Shows minor effects of iron—oxide staining.  CONTINUED ON NEXT PAGE	
Th an	e data d at th	presen	ted on	this Id	g is a ubsurfac	simpli e cor	fication	on of	f act	ual d	conditions encountered and applies only at the at other locations and may change with the	location of this boring

BORING NO.:

GLA-13

2 OF PAGE:

GW DEPTH: 49.7 feet

TOTAL DEPTH: 69.5 feet

JOB NO.: 9539 DRILLING METHOD: AIR ROTARY

SITE LOCATION: GREGORY CANYON LANDFILL

CONTRACTOR: WATER DEVELOPMENT CORPORATION
LOGGED BY: W. LOPEZ, CEG

DATE STARTED: 11/22/99
DATE FINISHED: 11/23/99
ELEVATION: 355.90
NORTHING: 2070269.329

EASTING: 6298912.906

	LOGGED BT: W. LOPEZ, CEG									EVZIMO: 0530315'300	<del>,</del>
TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
						55				UNWEATHERED BEDROCK: Dark gray (5Y4/1) to white (5Y8/1), phaneritic, fine— to coarse—grained TONALITE to GRANODIORITE with abundant felsic minerals with lesser mafic minerals. Shows minor effects of iron—oxide staining.	Moist.
16:04 11/23						60	<u></u>	AND THE PROPERTY OF THE PROPER			Wait 20 minutes. Sound for water. Groundwater encountered at 58 feet and rising.
7:46 8:22				- Landau Control of the Control of t		65					Very hard drilling. Water enters borehole while drilling.
						75				Notes:  1. Total depth of boring 69.5 feet. 2. Groundwater first encountered at 58 feet. Static water level measured at 49.7 feet. 3. Monitoring well constructed on 11/23/99 (see Monitoring Well Completion Summary).	
			The state of the s			80					
	Accompany - Laboratory					90					
	Party Company of the			A CANADA		95					
Th ar	e data	preser he time	ited on	this lo	og is a lubsurfac	simplifice e condi	ation o	of act	tual liffer	conditions encountered and applies only at th at other locations and may change with the	e location of this boring passage of time.

BORING NO.:

GLA-14

PAGE: 1 OF

GW DEPTH: 36.5 feet

TOTAL DEPTH: 63 feet

JOB NO.: 9539 DRILLING METHOD:

CONTRACTOR:

LOGGED BY: W. LOPEZ, CEG

SITE LOCATION: GREGORY CANYON LANDFILL AIR ROTARY WATER DEVELOPMENT CORPORATION

11/21/99 11/21/99 332,21 DATE STARTED: DATE FINISHED: **ELEVATION:** 

NORTHING: 2069847.129 EASTING: 6298115.681

ORY DENSITY (LBS/CU. FT.) SAMPLE SIZE (INCHES) MOISTURE (☎) BLOWS (COUNT/FT. z SAMPLE TIME DESCRIPTION COMMENTS 7:35 Dry. Dark yellowish brown (10YR4/4) SILTY SAND to SANDY SILT with CLAY. SAND is fine-grained and poorly graded. 7:47 5 7:53 10-WEATHERED BEDROCK: Damp. Strong brown (7.5YR5/8), fine-grained 8:08 15 TONALITE (GRUSS) weathered with iron-oxide 8:13 staining and alteration of feldspar crystals to Light olive gray (5Y6/2) to gray (5Y5/1), phaneritic, fine- to coarse-grained, hornblend and quartz rich TONALITE with oxidation of 20 hornblend and biotite phenocrysts. ...(20'-22') — white (5Y8/1), unweathered GRANODIORITE dike composed of predominantly Hard drilling. quartz and feldspar phenocrysts. 8:33 25 8:48 10:30 15:00 30 35 Moist. Y 40 15:45  $\nabla$ ...(42') - groundwater first 15:20 encountered. 45. 15:26 Groundwater air lifted out 50 UNWEATHERED BEDROCK: 15:52 Dark gray (5Y4/1), phaneritic, subhedral, fineof boring while drilling. grained, biotite- and hornblend-rich TONALITE. CONTINUED ON NEXT PAGE The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

BORING NO.:

GW DEPTH:

**GLA-14** 

36.5 feet

63 feet

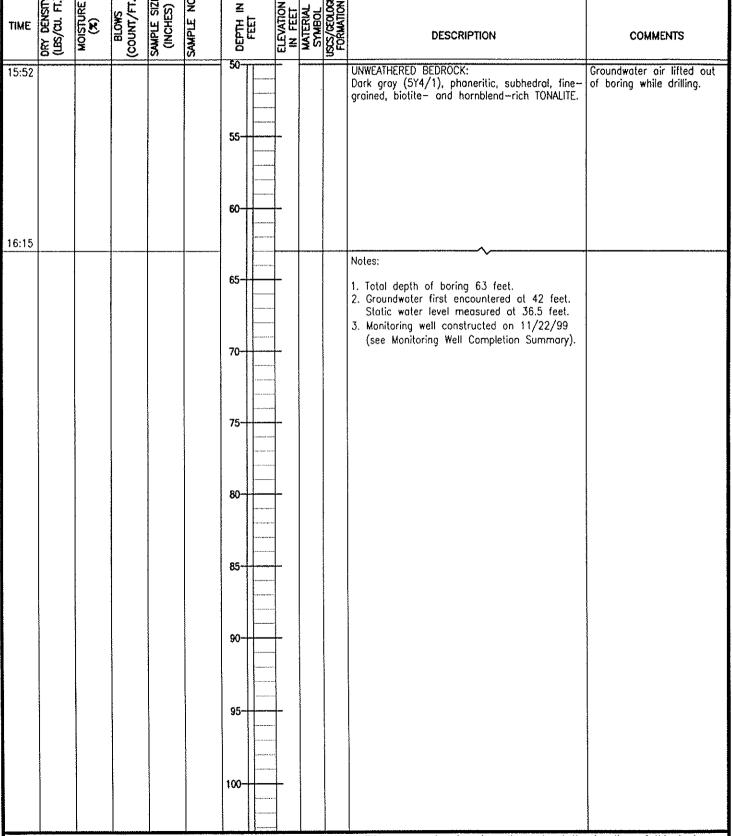
PAGE: 2 OF

JOB NO.: 9539

SITE LOCATION: GREGORY CANYON LANDFILL

DATE STARTED: 11/21/99 DATE FINISHED: 11/21/99

SITE LOCATION:	GREGORY CANYON LANDFILL	DATE FINISHED:	11/21/99	TOTAL DEPTH:
DRILLING METHOD:	AIR ROTARY	ELEVATION:	332.21	
CONTRACTOR:	WATER DEVELOPMENT CORPORATION	NORTHING:	2069847.129	
LOGGED BY:	W. LOPEZ, CEG	EASTING:	6298115.681	
KSIITY FF.)	SIZE SIZE (SS) NO. NO. NO. NO. NO. NO. NO. NO. NO. NA. NA. NA. NA. NA. NA. NA. NA. NA. NA			



BORING NO.:

**GLA-15** 

PAGE: 1 OF

JOB NO.: SITE LOCATION: DRILLING METHOD: CONTRACTOR:

9539

GREGORY CANYON LANDFILL AIR ROTARY
WATER DEVELOPMENT CORPORATION

GW DEPTH: 12 feet TOTAL DEPTH: 50 feet

LOGGED BY: W. LOPEZ, CEG

DATE STARTED: 11/19/99
DATE FINISHED: 11/19/99
ELEVATION: 304.82
NORTHING: 2068403.283 EASTING: 6297080.768

		CCED B		,						Les	EASTING: 6297080.768	
TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (X)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	- 121	ELEVATION IN FEET	MATERIAL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
3:10						0-				SM/ ML	ALLUVIUM: Light olive brown (2.5Y5/3) SILTY SAND to SANDY SILT. SAND is very fine-grained, poorly graded and micaceous.	D <sub>r</sub> y.
3:20						5-		••	Market C	SM	Dark grayish brown (2.5Y4/2), poorly graded, fine— with trace of medium—grained, micaceous SILTY SAND.	Moist.
3:34						10		- <u>▼</u>	A STATES OF STATES OF STATES		THEORET SIZE FOR THE	Very moist.
3:47						15-			opije dy i zwie dyd gan		(15') — SAND grades to fine— to medium—grained.	Slightly wet.
3:53						20-		_	Notes the Notes States (Notes States)			
						25-		<u></u>				(25') — groundwater fi encountered.
						30-		<del></del>				Slightly wet.
4:15 6:50						35-		_		di d'an dia san di angan da san di angan da san di angan da san di angan da san di angan da san di angan da sa	(35') — contains trace amounts of coarse— grained SAND and GRAVEL.	Groundwater air lifted ou of borehole while drilling.
•						40-	V	<b></b>				
						45-		-	40 (00 ) 50 (00 (00)			
7:10						50-	***************************************				Notes: 1. Total depth of boring 50 feet. 2. Groundwater first encountered at 25 feet. Static water level measured at 12 feet. 3. Monitoring well constructed on 11/20/99 (see Monitoring Well Completion Summary).	

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

BORING NO.:

GLA-16

PAGE: 1 OF

JOB NO.: SITE LOCATION: DRILLING METHOD: CONTRACTOR:

9539 GREGORY CANYON LANDFILL HOLLOW STEM AUGER - 8"# WATER DEVELOPMENT CORPORATION DATE STARTED: 12/20/99 DATE FINISHED: 12/20/99 ELEVATION: 305.28 NORTHING: 2068429.193

GW DEPTH: 10.6 feet TOTAL DEPTH: 33.5 feet

CONTRACTOR: WATER DEVELOPMENT CORPORATION NORTHING: 2068429.193 LOGGED BY: W. LOPEZ, CEG EASTING: 6297089.329

00:00	 MOISTURE (X)	BLOWS (COUNT/FT	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN	1	ELEVATION IN FEET	MATERIA	USCS/GEOLOG FORWATION	DESCRIPTION	COMMENTS
					0		<b>-</b>		SM/ ML	ALLUVIUM: Light olive brown (2.5Y5/3) SILTY SAND to SANDY SILT. SAND is very fine—grained, poorly groded and micoceous.	Dry.
					5-			635500000000000000000000000000000000000	SM	Dark grayish brown (2.5Y4/2), poorly graded, fine— with trace of medium—groined, micaceous SILTY SAND.	Moist.
					10		Ā	en de Servicio Servicio			Slightly wet. (10.6') — groundwater first encountered.
				· · · · · · · · · · · · · · · · · · ·	15-						
					20		-	भारताहरू के के किस्ताहरू का किस्ताहरू			
					25-						
):15					30			100 00 00 00 00 00 00 00 00 00 00 00 00			
7.10	 				35		<del>-</del>			Notes:  1. Total depth of boring 33.5 feet. 2. Groundwater first encountered at 10.6 feet.	
					40-		+			<ol> <li>Monitoring well constructed on 12/20/99 (see Monitoring Well Completion Summary).</li> </ol>	
					45		_				
					50						

and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.